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Burn-up Credit Criticality Safety Benchmark-Phase II-E

Impact of Isotopic Inventory Changes due to Control Rod Insertions on Reactivity and the End Effect in PWR UO_2 Fuel Assemblies

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Impact of Isotopic Inventory Changes due to Control Rod Insertions on Reactivity and the End Effect in PWR UO_2 Fuel Assemblies

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Overview

The report on hand describes the final results of the Phase II-E Burn-up Credit Criticality Benchmark conducted by the Expert Group on Burn-up Credit Criticality Safety of the OECD Nuclear Energy Agency.

The objective of Phase II of the Burn-up Credit Criticality Safety 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-E benchmark was to study the impact of changes on the spent nuclear fuel isotopic composition due to control rod insertion during depletion on the reactivity and the end effect of spent fuel assemblies with realistic axial burn-up profiles for different control rod insertion depths ranging from 0 cm (no insertion) to full insertion (i.e. to the case that the fuel assemblies were exposed to control rod insertion over their full active length). For this purpose two axial burn-up profiles have been extracted from an AREVA-NP-GmbH-owned 17×17-(24+1) PWR UO_2 spent fuel assembly burn-up profile database. One profile has an average burn-up of 30 MWd/kg U, the other profile is related to an average burn-up of 50 MWd/kg U. Two profiles with different average burn-up values were selected because the shape of the burn-up profile is affected by the average burn-up and the end effect depends on the average burn-up of the fuel.

The Phase II-E benchmark exercise complements the Phase II-C and Phase II-D benchmark exercises. In Phase II-D different irradiation histories were analysed using different control rod insertion histories during depletion as well as irradiation histories without control rod insertion. But in all the histories analysed a uniform distribution of the burn-up and hence a uniform distribution of the isotopic composition were assumed; and in all the histories including any usage of control rods full insertion of the control rods was assumed. In Phase II-C the impact of the asymmetry of axial burn-up profiles on the reactivity and the end effect of PWR UO_2 spent fuel assemblies was analysed. The results of the Phase II-C benchmark were used to define the two axial burn-up profiles for the Phase II-E benchmark such that the impact of the asymmetry on the reactivity and the end effect is bounded.

The two profiles together with the sets of isotopic number densities related to different control rod insertion depths during depletion were provided to the participants in the Phase II-E benchmark. To enable the participants to estimate the end effects related to the profiles and the control rod insertion depths the isotopic number densities applying to uniform distributions of the two average burn-ups of 30 MWd/kg U and 50 MWd/kg U were also supplied.

In the Phase II-E benchmark basically the same conceptual transport cask configuration was employed as was already used in Phase II-C: A finite transport cask made of stainless steel is used, containing 21 fuel assemblies separated by borated stainless steel plates. The cask was assumed to be fully flooded with pure light water.

In total, fourteen solutions were submitted to the Phase II-E benchmark exercise, by ten companies/organisations in seven countries. The participants were asked to calculate, using the two axial burn-up profiles and the related uniform burn-up distributions, the neutron multiplication factors k_{eff} of the cask configuration employing the sets of isotopic number densities related to preset control rod insertion depths during depletion. In addition, the optional task was suggested to the participants to calculate for both, the axial burn-up profiles as well as the related uniform burn-up distributions, the axial fission densities for the axial zones that had been used to describe the axial burn-up distributions for the different control rod insertion depths. For this optional task three solutions were submitted by three companies/organisations in three countries.

The analysis of the results obtained for the Phase II-E benchmark exercise begins with a discussion of the spread of the k_{eff} results. Following this, the evaluation of the end effect is accomplished starting with a discussion of the spread of the end effect results following from the k_{eff} results. Then the functional dependence of the end effect Δk on the control rod insertion depth d_{CR} is described by introducing and deriving model functions $\Delta k = \Delta k(d_{CR})$. After that the fission density results are evaluated by introducing and deriving fission density model functions describing the axial fission probability density for the different control rod insertion depths d_{CR}. Using these fission density model functions the fission probability content of the top end region of the active zone of the fuel assemblies is estimated as a function of d_{CR}. The change of the fission probability top end content with changing d_{CR} is compared with the change of the neutron multiplication factor and the change of the end effect with changing d_{CR}.

Predictions of the qualitative behaviour of the neutron multiplication factor and the end effect as a function of the control rod insertion depth were already made in the Phase II-C report "Impact of the Asymmetry of PWR Axial Burn-up Profiles on the End Effect" [4]. These predictions are verified in the report on hand. Moreover, because the Phase II-E average burn-up isotopic number densities for the case of no control rod insertion ($d_{CR} = 0$) are very similar to the Phase II-C average burn-up isotopic number densities, predictions of the end effect and the fission probability top end content for $d_{CR} = 0$ are made in the report on hand for both axial burn-up profiles employed, the 30 MWd/kg U profile and the 50 MWd/kg U profile. These predictions are derived from the relations between end effect, asymmetry of axial burn-up profiles, and fission probability top end content, which have been established in the Phase II-C report (in Appendix VI of that report, in the main). All these predictions are verified in the report on hand, which demonstrates the practical relevance of the relations established in the Phase II-C report. In addition, it turns out that parameters describing the average burn-up transformation characteristics of these relations play important roles in comparisons of the end effect model functions $\Delta k(d_{CR} \mid 30\ \mathrm{MWd/kg\ U})$ and $\Delta k(d_{CR} \mid 50\ \mathrm{MWd/kg\ U})$ derived for the two Phase II-E axial burn-up profiles.

Thus, the Phase II-E benchmark exercise complements the Phase II-C and Phase II-D benchmark exercises. The applicability of the knowledge gained from the results of all these three exercises to burn-up credit criticality safety design calculations is demonstrated.

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1 Introduction

In the Phase II-D benchmark of the OECD/NEA Burn-up Credit Working Group Programme, the effect of control rod insertion during irradiation of PWR UO_2 fuel assemblies on the spent fuel composition was studied. It was shown that, due to spectrum hardening, control rod insertion results in a change of the spent nuclear fuel isotopic inventory; and it was demonstrated that, at given initial enrichment and given burn-up, spent nuclear fuel which was exposed to control rod insertion during irradiation has a higher reactivity than spent nuclear fuel which has not been exposed to control rod insertion [1].

In the Phase II-D benchmark exercise different irradiation histories were analysed including histories with control rod insertion during the total irradiation time, histories with control rod insertion during some partial periods (cycles) of the irradiation time as well as histories (as reference cases) without any usage of control rods. But in all the histories which include any usage of control rods it was assumed that the fuel assemblies were exposed to control rod insertion over their full active length; and in all cases analysed a uniform distribution of the burn-up and hence a uniform distribution of the isotopic number densities were assumed. The objective of the Phase II-E benchmark is to study the impact of changes on the spent nuclear fuel isotopic composition due to control rod insertion on the reactivity and the end effect of fuel assemblies with realistic axial burn-up profiles for different control rod insertion depths ranging from 0 cm (no insertion) to full insertion. It is not the objective of the Phase II-E benchmark to analyse the impact of control rod insertions on the shape of an axial burn-up profile. Actually, this does not cause any real loss of generality since in virtually all burn-up credit criticality safety analysis application cases occurring in real life it is necessary to look for an axial burn-up distribution which is bounding, with respect to reactivity, in shape and isotopic inventory [2]. The axial burn-up profiles used in the Phase II-E benchmark are bounding in shape, and the impact of changes in the isotopic inventory on the reactivity is just the subject matter of the benchmark.

In this benchmark, basically the same conceptual transport cask configuration is employed as was already used in the Phase II-B and Phase II-C benchmark exercises [3] [4]. The cask assumed to be made of stainless steel is taken to be loaded with 21 PWR UO_2 spent fuel assemblies which are assumed to be positioned in a borated stainless steel basket centred in the cask. The cask is assumed to be fully flooded with pure light water (H_2O). Fuel assemblies of the 17×17-(24+1) type are used in the Phase II-E benchmark since this assembly type was employed in the Phase II-D benchmark exercise. The bounding axial burn-up profiles selected for the Phase II-E benchmark were extracted from a 17×17-(24+1) PWR UO_2 axial burn-up profile database[1)] by means of the methods described in [5]. These methods were developed to generate a bounding axial burn-up profile as a continuous function of the profile's average burn-up making use of the fact that the asymmetry of real axial burn-up profiles decreases with increasing average burn-up. This fact was already considered in the Phase II-C benchmark exercise [4]. Accordingly, two axial burn-up profiles different in average burn-up and hence different in asymmetry were generated for the Phase II-E benchmark. Therefore, the Phase II- E benchmark exercise combines issues of the Phase II-C benchmark with subjects of the Phase II-D benchmark.

1) This database is not open to the public.

2 Abbreviations, definitions and notations

2.1 Abbreviations

ABP:= Axial Burn-up Profile

BUC:= Burn-up Credit

CR:= Control Rod(s)

CSA:= Criticality Safety Analysis

FD:= Fission Density

LA:= Local Asymmetry (see Section 2.2.3)

PWR:= Pressurised Water Reactor

SNF:= Spent Nuclear Fuel

UD:= Uniform Distribution

2.2 Definitions and notations

2.2.1 Reactivity change due to control rod insertion

The change of the reactivity ρ of the analysed cask configuration due to CR insertion during irradiation of the fuel assemblies placed in the cask is described as defined by Equation (2.1),

$$\delta\rho(d_{CR}) = \rho(d_{CR} \geq 0) - \rho(d_{CR} = 0) = \frac{\delta k_{eff}(d_{CR})}{k_{eff}(d_{CR} \geq 0) \cdot k_{eff}(d_{CR} = 0)} \tag{2.1}$$

with

$$\delta k_{eff}(d_{CR}) = k_{eff}(d_{CR} \geq 0) - k_{eff}(d_{CR} = 0)\,. \tag{2.2}$$

d_{CR} in Equations (2.1) and (2.2) denotes the CR insertion depth in the active zone of the fuel assemblies during irradiation, and $k_{eff}(d_{CR})$ is the effective neutron multiplication factor of the cask configuration obtained under the assumption of the insertion depth d_{CR} during the irradiation of the fuel assemblies.

Equations (2.1) and (2.2) are applicable to the use of any non-uniform axial burn-up profile as well as to the assumption of the uniform distribution of the average burn-up of the axial burn-up profile. For the sake of simplicity, Equation (2.2) instead of Equation (2.1) is usually used in the report on hand.

2.2.2 End effect

As in [4] the impact of the non-uniformity of an axial burn-up profile on the reactivity of a SNF configuration is 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 called "end effect",

$$\text{End effect} \equiv \Delta k(d_{CR}) = k_{eff}\left(ABP \middle| d_{CR}\right) - k_{eff}\left(UD(\hat{B}_{ABP}) \middle| d_{CR}\right) , \tag{2.3}$$

$k_{eff}\left(ABP \middle| d_{CR}\right) :=$ multiplication factor obtained with the axial burn-up profile under the condition of a CR insertion depth d_{CR} during the irradiation of the fuel;

$\hat{B}_{ABP} :=$ averaged burn-up of the profile;

$UD(\hat{B}_{ABP}) :=$ uniform distribution of $\hat{B}_{ABP}$;

$k_{eff}\left(UD(\hat{B}_{ABP}) \middle| d_{CR}\right) :=$ multiplication factor obtained with $UD(\hat{B}_{ABP})$ under the condition of a CR insertion depth d_{CR} during the irradiation of the fuel.

Note that uniform distribution of the averaged burn-up $\hat{B}_{ABP}$ does not imply uniform distribution of the isotopic inventory. For partial CR insertion, the uniform distribution of the averaged burn-up $\hat{B}_{ABP}$ have to be split into two axial zones with lengths d_{CR} and $L - d_{CR}$ where L denotes the total axial length of the active zone of the fuel assemblies. The zone d_{CR} contains the uniformly distributed isotopic inventory obtained for the uniform burn-up $\hat{B}_{ABP}$ under the condition of CR insertion. The zone $L - d_{CR}$ contains the uniformly distributed isotopic inventory obtained for the uniform burn-up $\hat{B}_{ABP}$ under the assumption that the fuel has not been exposed to CR insertion.

The change in the end effect due to CR insertion is described as given by Equation (2.4),

$$\delta(\Delta k(d_{CR})) = \Delta k(d_{CR} \geq 0) - \Delta k(d_{CR} = 0) . \tag{2.4}$$

2.2.3 Description of the shape of axial burn-up profiles

As already mentioned in Section 1, two bounding axial burn-up profiles different in average burn-up and different in asymmetry have been generated for the Phase II-E benchmark exercise from an AREVA-NP-GmbH-owned 17×17-(24+1) PWR UO_2 fuel assembly burn-up profile database. As indicated in Figure 2.1, one profile is related to an average burn-up of 30 MWd/kg U, the other has been generated for an average burn-up of 50 MWd/kg U. As appears from this figure, the profiles are given on 35 equidistant axial nodes.

Characteristics of the shape of the profiles are described by using, as in [4], normalised shapes as defined by Equation (2.5),

$$\alpha_{\nu\mu} = \frac{B_{\nu\mu}}{\hat{B}_{\mu}}, \ \nu = 1,...,n; \ n = 35 . \tag{2.5}$$

$B_{\nu\mu}$ denotes the burn-up at node ν of the μ-th axial profile, and $\hat{B}_{\mu}$ is the average burn-up of this profile,

$$B_{\nu\mu} = \frac{1}{\Delta\zeta_{\nu}} \cdot \int_{\zeta_{\nu-1}}^{\zeta_{\nu}} B_{\mu}(z)\,dz , \tag{2.6}$$

$$\hat{B}_{\mu} = \frac{1}{L} \cdot \int_{0}^{L} B_{\mu}(z)\,dz . \tag{2.7}$$

L is, as already defined in Section 2.2.2, the total active length of the fuel zone of the fuel assemblies; and $\Delta\zeta_\nu$ denotes the "node length" of the ν-th node,

$$\Delta\zeta_\nu = \zeta_\nu - \zeta_{\nu-1}\,,\ \nu = 1,\ldots,n\,; \tag{2.8}$$

ζ_ν := axial height of the upper bound of the ν-th node, $\zeta_0 = 0$ and $\zeta_n = L$.

Since the nodes are equidistant and since the "bottom node" ν = 1 and the "top node" ν = n = 35 are located such that:

$$\Delta\zeta_\nu = \frac{L}{n} \equiv \Delta\zeta \tag{2.9}$$

for all $\nu = 1,\ldots,n$, Equation (2.7) becomes with Equation (2.6)

$$\hat{B}_\mu = \frac{1}{n \cdot \Delta\zeta} \sum_{\nu=1}^{n} \int_{\zeta_{\nu-1}}^{\zeta_\nu} B_\mu(z)\,dz = \frac{1}{n} \sum_{\nu=1}^{n} B_{\nu\mu}\,. \tag{2.10}$$

The ratios (2.5) must therefore obey the relation (2.11),

$$\sum_{\nu=1}^{n} \alpha_{\nu\mu} = \frac{1}{\hat{B}_\mu} \sum_{\nu=1}^{n} B_{\nu\mu} = n\,. \tag{2.11}$$

As described in Section 1, the axial burn-up profiles selected for the Phase II-E benchmark were generated by means of the methods described in [5]. The selected profiles are therefore provided by a normalised bounding axial burn-up profile, which is defined as a continuous function of the average burn-up $\hat{B}$ such that the decrease of the asymmetry of real axial burn-up profiles with increasing average burn-up, as established by the statistics of the $\alpha_{\nu\mu}$ values derived from the evaluated profile database, is taken into account. Figure 2.2 presents the normalised bounding axial burn-up profiles for the average burn-up values chosen for the Phase II-E benchmark. The $\alpha_{\nu\mu}$ values related to these average burn-up values are given in Table 2.1. Figure 2.2 demonstrates the decrease of the profile's asymmetry with increasing burn-up for the evaluated profile database.

The asymmetry of an axial burn-up profile is described, as in [4], by the so-called "top end parameter" defined by Equation (2.12)

$$S\kappa(\mu) = \frac{1}{n} \sum_{\lambda=1}^{\kappa} \alpha_{n-\lambda+1,\mu}\,,\ n = 35\,. \tag{2.12}$$

In analogy to [4], $\kappa = 7$ is chosen since, as appears from Figures 2.1 and 2.2, the axial burn-up profiles slope up from the top node ν = 35 (λ = 1) to the node ν = 29 ($\lambda = 7 = \kappa$) and reach then, at node ν = 28, a plateau.

The active length L of the fuel assemblies amounts to 365.76 cm (cf. Section 4.1.1). As follows from Equation (2.9), the axial length of the fuel region related to the top end parameter $S\kappa = S7$ amounts to 73.152 cm. This is the same length as was defined by the top end parameter used in the Phase II-C benchmark exercise, [4].[2)]

2) The fuel assemblies used in [4] have an active length of 390 cm. The axial burn-up profiles analysed in [4] were given on 32 nodes; and S6 was chosen as the top end parameter. The 32 nodes meet Equation (2.9). Thus the length of the fuel region related to the top end parameter S6 used in [4] amounts just to 73.152 cm.

From Table 2.1 it follows that

$$S7 = \begin{cases} 0.1559 \text{ for } \hat{B} = 30 \text{ MWd/kg U} \\ 0.1606 \text{ for } \hat{B} = 50 \text{ MWd/kg U} \end{cases} \tag{2.13}$$

indicating the fact that the 50 MWd/kg U axial profile has a lower degree of asymmetry than the 30 MWd/kg U profile.

The sloping-up of the axial burn-up profiles in the fuel region related to the top end parameter S7 is described by the so-called "local asymmetry" parameter LA introduced in Appendix VI of [4],

$$LA = \frac{\frac{1}{2}\cdot(S3 + S4)}{S7}, \tag{2.14}$$

where S3 and S4 are given by Equation (2.12) with $\kappa = 3$ and $\kappa = 4$, respectively.[3)]

As can be obtained from Table 2.1,

$$LA = \begin{cases} 0.370032 \text{ for } \hat{B} = 30 \text{ MWd/kg U} \\ 0.377395 \text{ for } \hat{B} = 50 \text{ MWd/kg U} \end{cases}. \tag{2.15}$$

2.2.4 Modelling of axial burn-up profiles

To calculate the neutron multiplication factor $k_{eff}(ABP | d_{CR})$ and hence the related end effect $\Delta k(d_{CR})$, it is necessary to extract a model distribution from the shape of the axial burn-up profile of interest. Usually a step distribution of uniform burn-up zones is used as a model distribution to describe the shape of axial burn-up profile.

It is obvious that the burn-up values $B_{\nu\mu}$ define a basic step distribution for the μ-th axial burn-up profile of interest. But due to the shape of a PWR axial burn-up profile it is reasonable, as appears from Figure 2.1, to group some of the nodes of the profile's plateau region in a few axial zones together. So, let m be the number of uniform burn-up zones thus obtained; and let $(k_i + 1)$ be the number of nodes grouped together in the i-th zone. The i-th zone thus starts with the node number:

$$\nu_s(i) = \left[\sum_{j=1}^{i-1}(1 + k_j)\right] + 1, \quad i = 1,\ldots,m, \tag{2.16}$$

and ends with the node number

$$\nu_e(i) = \sum_{j=1}^{i}(1 + k_j), \quad i = 1,\ldots,m. \tag{2.17}$$

For $i = 1$ Equation (2.16) becomes $\nu_s(1) = 1$. For $i = m$ Equation (2.17) has to meet the relation (2.18),

$$\nu_e(m) = \sum_{j=1}^{m}(1 + k_j) = n. \tag{2.18}$$

---

3) Since one has the same top end parameter length of 73.125 cm as in [4], the definition (2.14) is completely in compliance with the definition given in [4].

So, as was to be expected, $\sum_{j=1}^{m} k_j = n - m$.

The uniform burn-up of the i-th zone is given by Equation (2.19):

$$B_{i\mu} = \frac{\sum_{\nu=\nu_s(i)}^{\nu_e(i)} B_{\nu\mu}\,\Delta\zeta_\nu}{\sum_{\nu=\nu_s(i)}^{\nu_e(i)} \Delta\zeta_\nu}\ ,\ i = 1,\ldots,m\,, \tag{2.19}$$

which becomes because of Equation (2.9):

$$B_{i\mu} = \frac{1}{k_i + 1} \sum_{\nu=\nu_s(i)}^{\nu_e(i)} B_{\nu\mu}\ ,\ i = 1,\ldots,m\,; \tag{2.20}$$

and the axial length of the i-th zone is given by Equation (2.21):

$$\Delta z_i = (k_i + 1)\cdot\Delta\zeta\ ,\ i = 1,\ldots,m\,. \tag{2.21}$$

Let z_i be the axial height of the upper bound of the i-th zone. Equation (2.21) can then be written as follows

$$\Delta z_i = z_i - z_{i-1}\ ,\ i = 1,\ldots,m\,, \tag{2.22}$$

with

$$z_i = \zeta_{\nu_e(i)} = \nu_e(i)\cdot\Delta\zeta\ ,\ i = 1,\ldots,m\,,\ \text{and}\ z_0 = 0\,. \tag{2.23}$$

In the Phase II-E benchmark m = 19 axial zones are used. Table 2.2 gives the node numbers $\nu_s(i)$ and $\nu_e(i)$, the heights z_i and, for the chosen average burn-up values of 30 MWd/kg U (μ = 1) and 50 MWd/kg U (μ = 2), the uniform burn-up B_i.

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

$$\{N_{\lambda i}, \lambda = 1,\ldots,n_{isot}\} = \{N_\lambda(B_i), \lambda = 1,\ldots,n_{isot}\},\ i = 1,\ldots,m\,; \tag{2.24}$$

n_{isot} denotes the number of isotopes considered in the calculation of $k_{eff}(ABP|\,d_{CR})$ and the related end effect $\Delta k(d_{CR})$.

The number densities $N_{\lambda i}$ are assigned to the burn-up step B_i by means of depletion calculations which include CR insertion if the zone $[z_{i-1}, z_i]$ belongs to that range of the active fuel zone which is assumed to be exposed to CR insertion.

In case that only a part of the zone $[z_{i-1}, z_i]$ falls into this range, the zone $[z_{i-1}, z_i]$ is split into two parts which have one and the same burn-up value B_i but usually different isotopic number density values $N_{\lambda i}$ for $\lambda = 1,\ldots,n_{isot}$. So, in this case actually m = 20 axial zones are used.[4)]

[4)] The geometrical splitting of one zone into two parts under otherwise unchanged conditions has no physical impact on the neutron multiplication factor. By definition, both parts have one and the same burn-up. So, if one and the same set of

2.2.5 Modelling of uniform burn-up distributions

To be able to calculate the end effect $\Delta k(d_{CR})$ as a function of the CR insertion depth in a consistent way according to Equation (2.3), it is necessary for partial CR insertion, i.e. for all cases $0 < d_{CR} < L$, to divide the uniform burn-up distribution in two axial zones with equal burn-up but different isotopic inventories as already described in Section 2.2.2.

2.2.6 Fission densities

To facilitate more detailed analysis of the impact of changes in the isotopic composition due to CR insertion during irradiation of fuel assemblies on the reactivity and the end effect of these assemblies, contributors to the Phase II-E benchmark were invited by [6] to calculate, together with the neutron multiplication factors $k_{eff}\left(ABP \middle| d_{CR}\right)$, axial fission density distributions for the axial burn-up profiles as well as, together with the neutron multiplication factors $k_{eff}\left(UD(\hat{B}_{ABP}) \middle| d_{CR}\right)$, axial fission density distributions for the uniform burn-up distributions.

Let $f\left(z \middle| d_{CR}\right)$ be the axial fission density distribution obtained with a given axial burn-up distribution for the fuel configuration of interest under the condition that a CR insertion depth of d_{CR} was applied during the irradiation of the fuel. $f\left(z \middle| d_{CR}\right)$ reflects the importance of the axial zone dz at height z of the fuel zone for the reactivity of the fuel configuration of interest under the given axial burn-up distribution and the CR insertion depth d_{CR},

$$dP(d_{CR}) = \frac{1}{I} f\left(z \middle| d_{CR}\right) dz\,, \tag{2.25}$$

$dP(d_{CR})$:= relative importance of the axial zone ranging from z to z + dz,

$$I = \int_0^L f\left(z \middle| d_{CR}\right) dz\,. \tag{2.26}$$

For the unrodded case during irradiation, i.e. for $d_{CR} = 0$, the dependence of the shape of the axial fission density distribution f(z) on:

- the shape and the average burn-up of the axial burn-up distribution
- the isotopes taken into account in the estimation of f(z)[5)]
- the axial distribution of the isotopic number densities[6)] as well as
- the fuel configuration of interest

has been discussed in detail in [3], [4] and [7].

isotopic number densities were assumed for both parts, these parts would be identical with respect to their neutron physics properties.

5) E.g. use of the actinide-only approach or the actinide-plus-fission-product approach.

6) E.g. changes in the axial isotopic number density distributions with cooling time.

As follows from [4] in particular, due to the asymmetry of the axial burn-up profiles selected for the Phase II-E benchmark, the fission density distributions that will be obtained with these profiles for the unrodded case $d_{CR} = 0$ are expected to be strongly peaked towards the top end of the fuel zone; and, as already discussed in Section 7.3 [4] on the basis of the Phase II-C benchmark results, it is to be expected that this peaking towards the top end of the fuel zone is heavily impacted by CR insertion during irradiation of the fuel and significantly dependent on the CR insertion depth d_{CR} . Therefore, the so-called "top end content" parameter $C\kappa$ introduced in Appendix VI [4] will be used as a measure of the change of the shape of the fission density distribution $f(z|\, d_{CR})$ with the CR insertion depth d_{CR} ,

$$C\kappa(d_{CR}) = \frac{1}{I} \int_{z_\kappa}^{L} f(z|\, d_{CR})\, dz\,. \tag{2.27}$$

Because of Equation (2.9) z_κ is given by the relation (2.28),

$$z_\kappa = L - \kappa\Delta\zeta = L \cdot \left(1 - \frac{\kappa}{n}\right);\; n = 35\,. \tag{2.28}$$

As in [4], $C\kappa$ is regarded as to be defined on the analogy of the top end parameter $S\kappa$ given by Equation (2.12). Therefore, $\kappa = 7$ is used when the relation (2.27) is applied to the evaluation of the calculated fission densities.

The fission densities $\rho_i^{FD}(d_{CR})$ calculated in the Phase II-E benchmark exercise are dependent, as appears from Equation (2.29), on the modelling of the axial burn-up distributions:

$$\rho_i^{FD}(d_{CR}) \equiv \rho^{FD}\left([z_{i-1}, z_i]\,|\, d_{CR}\right) = \frac{\dfrac{1}{V_i} \displaystyle\int_{V_i} \Sigma_f(\vec{r}, E|\, d_{CR})\, \Phi(\vec{r}, E|\, d_{CR})\, d\vec{r}\, dE}{\displaystyle\sum_{j=1}^{m} \frac{1}{V_j} \int_{V_j} \Sigma_f(\vec{r}, E|\, d_{CR})\, \Phi(\vec{r}, E|\, d_{CR})\, d\vec{r}\, dE}\,,\; i = 1,\ldots,m\,, \tag{2.29}$$

$\Phi(\vec{r}, E|\, d_{CR})$:=	flux at locus $\vec{r}$ and energy E related to the case of a CR insertion depth of d_{CR} during irradiation of the fuel,
$\Sigma_f(\vec{r}, E|\, d_{CR})$:=	macroscopic fission cross-section at $\vec{r}$ and E related to this case,
V_i:=	volume of the i-th axial zone $[z_{i-1}, z_i]$.

By definition, ρ_i^{FD} 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 $[z_{i-1}, z_i]$ become:

$$V_i = A_{fuel} \cdot (z_i - z_{i-1}) = A_{fuel} \cdot \Delta z_i\;,\; i = 1,\ldots,m, \tag{2.30}$$

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

Equation (2.9) becomes, therefore,

$$\rho_i^{FD}(d_{CR}) = \frac{\frac{1}{\Delta z_i}\int\limits_{V_i}\Sigma_f\left(\vec{r},E\middle|\,d_{CR}\right)\Phi\left(\vec{r},E\middle|\,d_{CR}\right)d\vec{r}\,dE}{\sum\limits_{j=1}^{m}\frac{1}{\Delta z_j}\int\limits_{V_j}\Sigma_f\left(\vec{r},E\middle|\,d_{CR}\right)\Phi\left(\vec{r},E\middle|\,d_{CR}\right)d\vec{r}\,dE}, \; i = 1,\ldots,m\,. \tag{2.31}$$

To estimate fission density distributions $f\left(z\middle|\,d_{CR}\right)$ for the axial burn-up profiles selected for the Phase II-E benchmark (see Figure 2.1) the calculated fission densities $\rho_i^{FD}(d_{CR})$ will be fitted, as in Appendix VI [4], by means of non-linear least squares methods [8] and [9] using a model $f_M(z)$ defined by Equations (2.32) and (2.33):

$$f_M(z) = \sum_{\lambda=1}^{3\eta} g_\lambda(z), \; \eta = 1,2,\ldots, \tag{2.32}$$

$$g_\lambda(z) = \left\{\begin{array}{l} a_{\lambda 1}\cdot\exp[a_{\lambda 2}\cdot(z-a_{\lambda 3})] \text{ for } \lambda \neq 3j \\ a_{\lambda 1}\cdot\exp[a_{\lambda 2}\cdot(z-a_{\lambda 3})^2] \text{ for } \lambda = 3j \end{array}\right\}, \; j = 1,\ldots,\eta\,. \tag{2.33}$$

3 Objective and scope of the Phase II-E benchmark exercise

3.1 Objective of the Phase II-E benchmark exercise

The objective of the Phase II-E benchmark is to study the impact of CR insertion on PWR UO_2 fuel assemblies during irradiation on the reactivity and the end effect of the fuel assemblies when loaded in a transport cask. Therefore, in contrast to Phase II-D, non-uniform axial burn-up profiles are used in the Phase II-E benchmark exercise. The profiles selected for this benchmark are bounding with respect to the impact of the asymmetry of the shape of the profiles on the reactivity and the end effect of the fuel assemblies. They are provided by a normalised bounding axial burn-up profile which is defined as a continuous function of the average burn-up. This function has been generated by evaluating a database of real axial PWR burn-up profiles by the methods described in [5].

In BUC CSA application cases occurring in real life, it is necessary to look for axial burn-up profiles which are bounding with respect to the impact of the asymmetry of the shape of the profiles on the reactivity and the end effect of the fuel. It is therefore not the objective of the Phase II-E benchmark to consider impacts of CR insertions on the shape of axial burn-up profiles. Such impacts affect both the asymmetry and the "local asymmetry" [4] of the profiles. The changes of the reactivity and the end effect with increasing asymmetry and changing "local asymmetry" of the profiles have already been studied in the Phase II-C benchmark.

As stated above, the profiles selected for the Phase II-E benchmark exercise are bounding with respect to the impact of the asymmetry. Since they are derived from a normalised bounding axial burn-up profile which is defined as a continuous function of the average burn-up they cover both the decrease of the asymmetry of real axial burn-up profiles with increasing average burn-up and the increase of the end effect with increasing average burn-up at given asymmetry [4].

The Phase II-E benchmark exercise is addressed to the task to analyze the degree of the impact of CR insertion on the reactivity and the end effect as a function of the CR insertion depth d_{CR} during irradiation. Therefore, in contrast to Phase II-D, different CR insertion depths are assumed ranging from 0 cm (no insertion) to full insertion. Thus, the conclusions on the change of the reactivity and the end effect with increasing CR insertion depth, which were drawn from the Phase II-C results in Section 7.3 [4], are examined in the report on hand. Since these conclusions are based on reflections on the impact of CR insertion on axial fission density distributions the contributors to the Phase II-E benchmark were invited by [6] to calculate, together with the neutron multiplication factors, the fission densities $\rho_i^{FD}(d_{CR})$ as defined by Equation (2.29).

The Phase II-E benchmark exercise is aimed to make an attempt at describing mathematically the correlations of the reactivity, the end effect and, if made available, the shape of the fission density distribution to the CR insertion depth d_{CR}. These correlations are expected to be dependent on the average burn-up of the axial burn-up profiles selected for the Phase II-E benchmark because the reactivity, the end effect and the shape of the related fission density distribution are significantly dependent on the average burn-up of the profiles [4]. However, in the Phase II-C benchmark exercise relationships between correlations obtained for different average burn-up values have been observed. Therefore, provided that correlations of the reactivity, the end effect and the fission density distribution to the CR insertion depth d_{CR} can be established for the average burn-up values chosen, the Phase II-E benchmark includes the task to discover if it is possible to identify relationships between these correlations similar to those which have been observed in the Phase II-C exercise.

If correlations of the reactivity, the end effect and the fission densities to the CR insertion depth can be established for the chosen average burn-up values and if relationships between these correlations can be identified, it should be kept in mind that the values of the parameters used to describe the correlations and the relationships between these correlations may be strictly dependent on the SNF configuration analysed. However, such correlations and relationships, provided that they are found, are expected to deliver some basic information about the dependence of the reactivity, the end effect and the fission density distribution on the CR insertion depth and the impact of the average burn-up on this dependence.

3.2 Scope of the Phase II-E benchmark exercise

To be able to determine the correlations and relationships sought-after by means of a reasonable amount of calculations it was necessary to proceed as described in the following sections.

3.2.1 Selection of axial burn-up profiles

As mentioned in Section 1, two bounding axial burn-up profiles different in average burn-up and hence in asymmetry have been generated for the Phase II-E benchmark exercise from an AREVA-NP-GmbH-owned 17×17-(24+1) PWR UO_2 fuel assembly burn-up profile database by means of the methods described in [5]. This profile database includes a sufficiently large number of axial burn-up profiles covering 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 asymmetry, increases with increasing average burn-up.

The average burn-up values of 30 MWd/kg U and 50 MWd/kg U for which the axial profiles have been generated are big enough to observe significant end effects and different enough to be sensitive to the dependence of the degree of asymmetry of the profiles on the average burn-up and the dependence of the end effect on the average burn-up.

The respective burn-up model distributions, extracted from the selected axial burn-up profiles as described in Section 2.2.4, and the sets of isotopic number densities Equation (2.24) of the burn-up steps Equation (2.20) of the model distributions were provided for the contributors to the Phase II-E benchmark exercise. For each CR insertion depth d_{CR}, a specific set of isotopic number densities were delivered [6].

3.2.2 Selection of control rod insertion depths

In [6], the recommendation was made to consider CR insertion depths d_{CR} of 0 cm (no insertion), 10.45 cm, 20.90 cm, 31.35 cm, 41.80 cm, 52.25 cm, 73.15 cm, and 365.76 cm (full insertion). This set of CR insertion depths is just sufficient for checking the predictions made in Section 7.3 [4], on the change of the reactivity and the end effect with increasing CR insertion depth, but contributors to the Phase II-E benchmark were invited by [6] to include the consideration of CR insertion depths of

5.22 cm, 15.67 cm, 26.12 cm, 36.57 cm, 62.70 cm, and 94.05 cm to facilitate the attempt at identifying correlations of the reactivity, the end effect and, if made available, the fission density distribution to the CR insertion depth d_{CR}.

The CR insertions depths of 5.22 cm, 15.67 cm, 26.12 cm, and 36.57 cm require the use of 20 axial zones for the burn-up model distributions, whereas for all the other CR insertion depths specified above 19 axial zones are sufficient (see Section 2.2.4).

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

The set of isotopes for which the burn-up-dependent and d_{CR}-affected zone-specific number densities Equation (2.24) were provided for the contributors to the Phase II-E 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 [6].

The actinide-only approach is not applied to the Phase II-E 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 due to the non-uniformity of the axial burn-up profiles: Disregarding of the fission products results in an overestimation of the reactivity of the centre zone of the fuel assemblies since the fission product concentration is higher in this zone than in the fuel end zones.

3.2.4 Irradiation histories and cooling time

The sets of isotopic number densities Equation. (2.24) provided for the contributors of the Phase II-E benchmark exercise apply to irradiation histories with CR insertion during the total irradiation time at the respective CR insertion depths specified in Section 3.2.2. Irradiation histories with CR insertions during partial periods (cycles) of the irradiation time only are not considered in the Phase II-E benchmark. As follows from the Phase II-D benchmark results [1] and as demonstrated in Section 3.2 [10], at any given insertion depth $d_{CR} > 0$ CR insertion during the entire irradiation time results, at any given burn-up, in a higher increase of the reactivity of the fuel exposed to CR insertion than any CR insertion during some partial periods of the irradiation time, provided that all the other depletion conditions are kept constant. Of course, in real life the parameters describing the depletion conditions [2] are not mutually independent, and the values of the depletion parameters are changed when control rods are removed from fuel assemblies. However, it is common practice in BUC CSA to choose the depletion parameters independently from each other in such a way that application of a bounding depletion history is assured which leads, at given fuel design characteristics (as the initial enrichment in particular) and given burn-up, to the highest reactivity of the spent nuclear fuel under the conditions of the SNF configuration of interest. And, in fact, due to the lack of information about the actual CR insertion histories of the SNF assemblies to be analysed it is conservatively supposed very often in BUC CSA application cases that the fuel assemblies were exposed to CR insertion during the total irradiation time at an insertion depth d_{CR} of 80 cm at least. Therefore, with respect to the BUC CSA practice and with respect to the objective of the Phase II-E benchmark exercise, application of irradiation histories with CR insertions during the total irradiation time covers the aspects related to CR insertions during partial periods of the irradiation time. In other words, CR insertion during the entire irradiation time covers, at given burn-up and given insertion depth, the impacts of CR insertions during partial periods of the irradiation time on the reactivity and the end effect of the fuel assemblies under the conditions of the SNF configuration of interest.

The choice of some cooling time does not affect the objective of the Phase II-E benchmark. Therefore, for the sake of convenience zero cooling time has been chosen for the Phase II-E benchmark exercise. It was already shown in Phases II-A and II-B that the end effect increases with increasing cooling time[7)]. This increase is due to the non-uniformity of the axial burn-up profiles: Since the plutonium and fission product concentration is higher in the centre 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.

3.2.5 Isotopic number densities

Execution of depletion calculations by any contributor to the Phase II-E benchmark other than the author of the report on hand is beyond the scope of the Phase II-E benchmark exercise. The axial-zone-specific sets of isotopic number densities for the axial burn-up distributions [see Section 2.2.4, Equation (2.24)] as well as for the uniform burn-up distributions (see Section 2.2.5) were in fact given by the author of the report on hand, [6]. These sets of isotopic number densities have been calculated by means of the 2-D depletion code CASMO-4 [11] using a 70-group nuclear data library derived from JEF 2.2 [12]. Accordingly, due to the use of a 2-D depletion code, the sets of isotopic number densities given to the contributors of the Phase II-E benchmark are compilations of isotopic number densities obtained from depletion calculations for the case of CR insertion and the case of no CR insertion.

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

4 Specification of the Phase II-E benchmark configuration

4.1 Description of the Phase II-E fuel cask configuration

As already stated in Section 1, basically the same conceptual cask configuration as was already used in the Phase II-B and Phase II-C benchmark exercises [3] [4] is employed in the Phase II-E benchmark. The cask is assumed to be loaded with PWR fuel assemblies of the 17*17-(24+1) type, (see Figure 4.1). As illustrated in Figures 4.2 and 4.3, twenty-one fuel assemblies of this type are positioned in a borated stainless steel basket centred in the transport cask which is assumed to be fully flooded.

4.1.1 Fuel assembly data

- Fuel rod:
  - Spent fuel material: see Section 4.2.2
  - Fuel diameter: 0.8166 cm
  - Cladding inner diameter (= Gap diameter): 0.833 cm
  - Cladding outer diameter: 0.955 cm
  - Cladding material: zircaloy (number densities given in Table 4.1)
  - Active length: 365.76 cm
  - Full length: 386.71
  - Location of the active zone within the fuel rod: central positioning within the fuel rod (see Figures 4.3 and 4.4; the active zone is coloured in red in these figures)
  - The zones between the ends of the active zone and the ends of the fuel rods (coloured in green in Figures 4.3 and 4.4): These zones consist of cladding with vacuum (void) inside and water outside; springs and plugs ignored.
- Guide thimble and instrumentation tube:
  - Inner diameter: 1.138 cm
  - Outer diameter: 1.224 cm
  - Length: 386.71 cm
  - Material: zircaloy (see Table 4.1)
- Lattice (see Figure 4.1):
  - 17x17 lattice type
  - Number of fuel rods: 264
  - Number of guide thimbles: 24
  - Number of instrumentation tubes: 1
  - Rod pitch: 1.26 cm
  - Spacer grids: ignored
- Fuel assembly lower and upper hardware (see Figures 4.3 and 4.4):
  - Geometric cross-section: 21.42x21.42 cm^2

- Length: 10 cm

The lower and the upper hardware zones of the fuel assemblies are coloured in blue in Figures 4.3 and 4.4. These zones are assumed to be regions of smeared stainless steel (50 Vol.-%) and water (50 Vol.-%). The atomic number densities are given in Table 4.1.

As follows from the fuel assembly data specified above, the fuel assembly assumed is not quite realistic. The central positioning of the active fuel zone with respect to top and bottom ends of the fuel rods, the same size for the lower and upper fuel hardware, the same distance for the bottom end of the lower hardware from the lower cask lid and the top end of the upper hardware from the upper cask lid, and the same size for the lower and upper cask lid are assumed in order to have identical neutron reflection conditions at the bottom and top end of the fuel zone [4].

4.1.2 Fuel assembly basket

- Inner basket compartment dimensions: 22.2x22.2x412.76 cm^3 (each fuel assembly position, see Figures 4.2 and 4.3)
- Basket wall thickness: 0.25 cm (everywhere; only one basket wall between two adjacent fuel assembly positions, see Figures 4.2 and 4.3)
- Basket material: Borated stainless steel with 1 wt.-% of natural boron (atomic number densities given in Table 4.1)

(The basket material is presented in black colour in Figures 4.2 and 4.3.)

4.1.3 Cask

Cask shell (see Figures 4.2 and 4.3):

- Inner diameter: 140 cm
- Outer diameter: 220 cm
- Height:
  - Inner cavity: 412.76 cm
  - Outside: 492.76 cm
- Material: stainless steel (atomic number densities given in Table 4.1)

(The cask material is presented in grey in Figures 4.2 through 4.4.)

4.1.4 Configuration

- Twenty-one fuel assemblies in a 5x5 array (without corner positions) as shown in Figure 4.2
- Fuel assemblies placed centrally within the basket compartments (see Figure 4.3)
- Cask completely flooded with water (atomic number densities of water given in Table 4.1).

(Note: There is a water gap between the lower fuel assembly hardware and the lower cask lid in order to have identical neutron reflection conditions at the bottom and top end of the fuel zone, see Figures 4.3 and 4.4.)

4.2 Control rod insertion depths and axial zoning of the active zone of the fuel assemblies

4.2.1 Axial zoning for the axial burn-up profiles

Using the Control Rod (CR) insertion depths specified in Section 3.2.2, the two axial burn-up profiles employed in the Phase II-E benchmark (see Sections 1 and 3.2.1 as well as Figure 2.1) have been modelled by means of the procedure described in Section 2.2.4. The axial zones of the resulting axial burn-up model distributions are listed in Tables 4.2 through 4.15. Axial zones marked with the label "CR" in these tables are the zones which are assumed to be exposed to CR insertion during irradiation.

4.2.2 Axial zoning for the uniform burn-up distributions

As follows from Section 2.2.5, for partial CR insertion, i.e. for all cases in which the CR insertion depth d_{CR} is greater than zero and less than the active length of the fuel zone of the fuel assemblies, the fuel zone is divided into two axial zones, one zone for the region irradiated without CR insertion, the other zone for the region assumed to be exposed to CR insertion during irradiation. The length of the region with CR insertion follows from Tables 4.2 through 4.15.

4.2.3 Isotopic number densities for the axial zones

As already described in Section 3.2.5, the axial-zone-specific sets of isotopic number densities were calculated by means of CASMO-4 [11] using a 70-group nuclear data library derived from the JEF 2.2 nuclear data evaluation [11] and [12].

4.2.3.1 Depletion parameters used for calculating the isotopic number densities

For the depletion calculations, the same depletion parameters were mostly employed as were used in the Phase II-D benchmark [1]:

- Fuel temperature: T_F = 873 K;
- Moderator (coolant) temperature: T_M = 573 K;
- Moderator (coolant) density: ρ_M = 0.7269 g/cm^3;
- Boron concentration in the moderator (coolant): c_{Boron} = 456 ppm;
- Specific power: P_s = 38 W/g U;

Different from [1] a cladding temperature of T_C = 609 K is used which is automatically calculated by CASMO-4 according to the relation [11]:

$$T_C = 0.12 \cdot T_F + 0.88 \cdot T_M \qquad (4.1)$$

For the initial isotopic composition of the fuel, the same isotopic number densities were assumed as were used in the Phase II-D benchmark:

- $N(^{234}U) = 7.834 \cdot 10^{-6}\ b^{-1}cm^{-1}$

- $N(^{235}U) = 9.097 \cdot 10^{-4}\ b^{-1}cm^{-1}$
- $N(^{236}U) = 2.967 \cdot 10^{-6}\ b^{-1}cm^{-1}$
- $N(^{238}U) = 2.155 \cdot 10^{-2}\ b^{-1}cm^{-1}$
- $N(O) = 4.493 \cdot 10^{-2}\ b^{-1}cm^{-1}$

(These number densities refer to an initial enrichment of 4 wt.-% ^{235}U of the fuel assemblies, [1].

The control rod data are taken as follows:

- Geometry data
  - Absorber radius: 0.436 cm
  - Cladding radius: 0.486 cm
- Material data:
  - Absorber material (AgInCd):
    ^{107}Ag: 41.41281 wt.-%
    ^{109}Ag: 39.19292 wt.-%
    ^{115}In: 14.48072 wt.-%
    ^{110}Cd: 0.59999 wt.-%
    ^{111}Cd: 0.62048 wt.-%
    ^{112}Cd: 1.18028 wt.-%
    ^{113}Cd: 0.60304 wt.-%
    ^{114}Cd: 1.43038 wt.-%
    ^{116}Cd: 0.37947 wt.-%
    O: 0.09991 wt.-%
    Density: 9.97989 g/cm^3
  - Cladding:
    Si: 0.4 wt.-%
    Cr: 18.0 wt.-%
    Mn: 1.0 wt.-%
    Fe: 70.6 wt.-%
    Ni: 10.0 wt.-%
    Density: 7.309394 g/cm^3

The resulting sets of isotopic number densities were stored in ASCII-formatted files which have been provided for the contributors of the Phase II-E benchmark.

4.2.3.2 Isotopic number density files for the axial burn-up profiles

The files for the axial zones of the axial burn-up model distributions representing the axial burn-up profiles used for Phase II-E are named as "edxx_f01_idnnnnn_bmm.mip". "idnnnnn" in this names is the indicator of the related CR insertion depth ("id01045" stands for the insertion depth 10.45 cm for instance); and "bmm" is the indicator of the average burn-up value of the profiles ("b30" stands for 30 MWd/kg U average burn-up for instance). (The indicators "edxx" and "f01" of the file names are of no importance for contributors to the benchmark). The names of these files are assigned to the axial zoning Tables 4.2 through 4.15. Outprints of these files are given in Appendix I of the report on hand. At the beginning of Appendix I, the structure of these files is explained. As indicated there, the isotopic number densities are given in the order of the axial zones specified in Tables 4.2 through 4.15.

4.2.3.3 Isotopic number density files for the uniform burn-up distributions

The isotopic number densities for the uniform axial burn-up distributions are given in the following files:

- "unifo_cr_out_b30.mip" and "unifo_cr_out_b50.mip" for the case of no CR insertion (CR insertion depth 0cm)
- "unifo_cr_part_b30.mip" and "unifo_cr_part_b50.mip" for the case of partial CR insertion (CR insertion depths ranging from 5.22 cm to 94.05 cm, cf. Tables 4.3 through 4.14)
- "unifo_cr_full_b30.mip" and "unifo_cr_full_b50.mip" for the case of full CR insertion (CR insertion depth 365.76 cm).

Outprints of these files are given in Appendix II of the report on hand. At the beginning of this appendix it is explained that now the axial zone number "1" is related to the fuel region which has not been exposed to CR insertion, whereas the axial zone number "2" is related to the fuel region which has been exposed to CR insertion.

5 Specification of the Phase II-E benchmark calculation tasks

5.1 Calculation tasks

Two obligatory tasks and two optional tasks were proposed in [6]:

- Task 1: Reactivity calculations with the two axial burn-up profiles selected for Phase II-E (see Section 3.2.1 and Figure 2.1): Determination of the neutron multiplication factors k_{eff} of the above-specified Phase II-E cask configuration for at least eight CR insertion depths as summarised in Table 5.1. As given in this table, it is recommended to consider the CR insertion depths 0 cm (no insertion), 10.45 cm, 20.90 cm, 31.35 cm, 41.80 cm, 52.25 cm, 73.15 cm, and 365.76 cm (full insertion). (Axial zoning and number densities: see Sections 4.2.1 and 4.2.3.2 as well as the tables referenced in Table 5.1.)
- Task 2: Reactivity calculations with the uniform distributions of the average burn-up values of 30 MWd/kg U and 50 MWd/kg : Determination of the neutron multiplication factors k_{eff} of the Phase II-E cask configuration for the CR insertion depths selected in task No. 1. (Number densities: see Section 4.2.3.3.)
- Task 3 (*optional*): Together with task No. 1, for both axial burn-up profiles, determination of the fission densities Equation (2.31) in the axial zones specified in Tables 4.2 through 4.15. Convergence of the resultant axial fission density distributions should be checked[8)].
- Task 4 (*optional*): Together with task No. 2 fission density calculations with the uniform burn-up distributions: Determination of the fission densities Equation (2.31) in the axial zones specified in Tables 4.2 through 4.15.

5.2 Documentation of the calculation results

For the documentation of the calculation results a template in form of a self-explanatory EXCEL-file named as “p2e_results_name.xls” was attached to the benchmark specification Ref. [6]. An excerpt from this file is printed in Appendix III of the report on hand.

Contributors to the benchmark were asked to replace the string “name” in the file name “p2e_results_name.xls” by a string adequate for identifying each of them.

Contributors to the optional tasks No. 3 and No. 4 were asked to give information about the outcome of the tests on convergence of the fission density distributions. A template for yielding this information in case that the test procedure described in [6] has been applied is included in the above mentioned EXCEL file[9)]. Contributors who would have preferred to use other test procedures were asked in [6] to generate their own adequate information sheet and to give a brief description of the test procedure they applied.

Contributors to the benchmark were asked, in addition, to provide a doc-file or an ASCII-file which includes the following information:

- institute/company of the contributor;

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8) A statistical test procedure that can be used for this purpose is described in [6].

9) This template is not printed in Appendix III.

- names of the participants;
- name of the criticality calculation computer code applied;
- name of the nuclear data library applied;
- brief description of computer code and data library.

6 Predictions of Phase II-E results based on observations made in the Phase II-C and Phase II-D benchmark exercises

6.1 Prediction of the qualitative behaviour of the neutron multiplication factor and the end effect as a function of the control rod insertion depth

The qualitative behaviour of the neutron multiplication factor and the end effect as a function of the CR insertion depth d_{CR} has already been predicted in Section 7.3 [4]. The prediction has been made by following the increase of the fission probability:

$$P(\zeta) = \frac{1}{I}\int_{L-\zeta}^{L} dz\, f(z)_{ABP} \tag{6.1}$$ [10)]

with increasing distance ζ from the top end of the fuel assembly's active zone, $\zeta \in [0, L]$. The increase in $P(\zeta)$ is determined by the fission probability density distribution $f(z)_{ABP}$ related to a given Axial Burn-up Profile (ABP), (see Figure 6.1). Accordingly, the following conclusions have been drawn in Section 7.3 [4]:

- As appears from Figure 6.1 for example, at the beginning, i.e. at small CR insertion depths ζ the fission probability $P(\zeta)$ 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, the higher the burn-up becomes with increasing ζ (see Figure 6.2).
- Then, with further increasing CR insertion depth ζ the increase of the fission probability $P(\zeta)$ 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 $P(\zeta)$ goes down more and more. It is therefore to be expected that the neutron multiplication factor $k_{eff}(ABP)$ 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 $P(\zeta)$ 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 (see Figure 6.1). It is therefore to be expected that both the rapidity with which the neutron multiplication factor $k_{eff}(ABP)$ 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.

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 the associated fission density distribution at zero CR insertion is the "starting condition" which significantly affects

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10) See Equations (2.25) and (2.26).

the rapidity with which $k_{eff}(ABP)$ can change due to the changes in the axial isotopic composition distribution caused by CR insertion.

The cosine-shaped fission density distribution associated with the uniform distribution of the average burn-up $\hat{B}_{ABP}$ (see Figure 6.3) provides a completely different "starting condition". Before a significant response of the neutron multiplication factor $k_{eff}(UD) \equiv k_{eff}\left(UD\left(\hat{B}_{ABP}\right)\right)$ 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 $k_{eff}(UD)$ starts to increase at a significantly higher ζ value than the neutron multiplication factor $k_{eff}(ABP)$.

After the neutron multiplication factor $k_{eff}(UD)$ starts 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 decreases 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 centre of the fuel zone, till at $\zeta = L$ the fission density distribution is again cosine-shaped.

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 increasing – even if the amount of the increase slows 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 Equation (2.3) by $\Delta k = k_{eff}(ABP) - k_{eff}(UD)$, has a maximum at a relatively low ζ value. This ζ value 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, as follows from the Phase II-D benchmark exercises [1], it is to be expected that the end effect Δk is lower for the case $\zeta = L$ than for the case $\zeta = 0$.

6.2 Predictions for the case of no control rod insertion

The objective of the Phase II-C benchmark was to study the impact of the asymmetry of the shape of axial burn-up profiles on the end effect and the axial fission density distribution [4]. As shown in [4], the end effect and the related fission density distribution resulting from an axial burn-up profile are significantly dependent on the profile's asymmetry defined by the profile's shape in the top end region of the axial fuel zone. But the end effect and the fission density distribution do not only depend on the shape of an axial burn-up profile, they do also depend on the axial isotopic composition distribution[11)].

As appears from Figures 6.4 and 6.5, the Phase II-E average burn-up isotopic number densities for the case of no CR insertion are very similar to the Phase II-C average burn-up isotopic number densities[12)]. The only significant differences are observed for ^{241}Am and ^{155}Gd which are due to the fact that in Phase II-C a cooling time of 5 years has been used (Section 3.2 [4]) whereas in Phase II-E zero cooling time is used (see Section 3.2.4). However, as appears from Figures 6.4 and 6.5, the differences in the respective average burn-up ^{241}Pu number densities are small. In addition, because the end effect and the fission density distribution is dominated by the top end region of an axial burn-up profile [4], where the burn-up and hence the ^{241}Pu concentration, the ^{241}Am concentration and the fission product concentration are significantly lower than for the average burn-up of the profile, the observed differences in the ^{241}Am and ^{155}Gd concentrations should be less important with respect to the impact of the axial isotopic composition distribution in the top end region of the Phase II-C and Phase II-E axial burn-up profiles on the end effect and the fission density distribution. Therefore and because the Phase II-E top end parameter S7 is related, as stated in Section 2.2.3, to the same axial length of the fuel assemblies' active zones as the Phase II-C top end parameter S6, it seems to be reasonable to deduce predictions from Phase II-C results for the unrodded Phase II-E cases, i.e. for the cases of no CR insertion ($d_{CR} = 0$).

Figure 6.6 shows the end effect as a function $\Delta k = \Delta k(S6)$ of the Phase II-C top end parameter S6 for the both average burn-up values of 32 MWd/kg U and 50 MWd/kg U used in the Phase II-C benchmark. Application of the S7 top end parameter of S7 = 0.1559 of the Phase II-E axial burn-up profile of 30 MWd/kg U average burn-up (see Equation (2.13)) to the Phase II-C relation $\Delta k = \Delta k(S6; \hat{B} = 32\ \mathrm{MWd/kg\ U})$ for 32 MWd/kg U average burn-up yields a prediction of $\Delta k \approx 0.011$ for the end effect related to the Phase II-E axial burn-up profile of 30 MWd/kg U average burn-up. However, since the end effect increases, at given asymmetry (i.e. at given top end parameter), with increasing average burn-up (see Figure 6.6), the predicted value can be multiplied by the ratio 30 MWd/kg U / 32 MWd/kg U, as follows from [4], Section 6.2.2. Therefore, a value of about 0.01 is predicted for the end effect induced by the Phase II-E axial burn-up profile of 30 MWd/kg U average burn-up in the unrodded case:

- Predicted end effect for the 30 MWd/kg U axial burn-up profile at $d_{CR} = 0$:

$$\Delta k(d_{CR} = 0; \hat{B} = 30\ \mathrm{MWd/kg\ U})_{\mathrm{predicted}} \approx 0.01 \tag{6.2}$$

As shown in Appendix VI, Section VI.3.3 [4], the higher the impact of the "local asymmetry of an axial burn-up profile, expressed by the "local asymmetry" parameter Equation (2.14) for the Phase II-E axial burn-up profiles on the end effect, the higher the average burn-up of the axial burn-up profile. It was found in Appendix VI, Section VI.3.3 [4], that the impact of the local asymmetry on the end

11) This is obviously due to physics. And it has already been shown, for instance, in Phase II-C (where it has been demonstrated, that the end effect increases, at given asymmetry, with increasing average burn-up, see Figure 6.6). It has been anticipated, due to the Phase II-D results, in Section 6.1, and it will be demonstrated one more time by the Phase II-E results.

12) In both benchmarks an initial enrichment of 4 wt.-% ^{235}U has been assumed for the fuel assemblies, see Section 4.2.3.1 and Section 3.2 [4].

effect has to be considered for profiles with average burn-ups of 50 MWd/kg U. This has been done in [4] by coupling the top end parameter Sκ with the local asymmetry parameter LA according to

$$A(\hat{B}_{ABP}) \equiv S\kappa + g(\hat{B}_{ABP}) \cdot LA \quad \text{with}\ \kappa = \begin{cases} 6 \ \text{for Phase II} - \text{C, cf. Ref. [4]} \\ 7 \ \text{for Phase II} - \text{E, cf. Section 2.2.3} \end{cases}$$
$$\text{and LA given by} \begin{cases} \text{eq. (VI.54) in Ref. [4] for Phase II} - \text{C} \\ \text{eq. (2.14) for Phase II} - \text{E} \end{cases} \tag{6.3}$$

For the coupling parameter $g(\hat{B}_{ABP})$ a value of 0.165 has been found in Phase II-C for the average burn-up $\hat{B}_{ABP}$ = 50 MWd/kg U (Appendix VI, Figure VI.43 [4]). Using this Phase II-C coupling parameter value together with the Phase II-E top end parameter S7 (see Equation (2.13)) and the Phase II-E local asymmetry parameter LA (see Equation (2.15)),

$$A(\hat{B}_{ABP} = 50\ \text{MWd/kg U}) = 0.1606 + 0.165 \cdot 0.377395 \approx 0.22287, \tag{6.4}$$

a value of about 0.04 follows from the relation $\Delta k = \Delta k(A; \hat{B} = 50\ \text{MWd/kg U})$ found in [4], see Figure 6.7:

- Predicted end effect for the 50 MWd/kg U axial burn-up profile at $d_{CR} = 0$:

$$\Delta k(d_{CR} = 0; \hat{B} = 50\ \text{MWd/kg U})_{predicted} \approx 0.04 \tag{6.5}$$

Predictions of the "top end content" $C7(d_{CR} = 0)$ (see Equation (2.27)) can also be deduced from Phase II-C results: As appears from Figure 6.8, with the top end parameter of S7 = 0.1559 of the 30 MWd/kg U axial burn-up profile, a top end content of C7 ≈ 0.775 follows from the Phase II-C results. This top end content value leads to a predicted value of Δk ≈ 0.012 for the end effect as follows from the Phase II-C regression function $\Delta k = \Delta k(C6; \hat{B} = 32\ \text{MWd/kg U})$ shown in Figure 6.9.

The Phase II-C regression functions $C6 = C6(S6)$ and $\Delta k = \Delta k(C6)$ shown in Figure 6.8 and Figure 6.9, respectively, for $\hat{B} = 50\ \text{MWd/kg U}$ do not consider the impact of the local asymmetry demonstrated in Figure 6.7. It seems to be more reasonable to use the Phase II-C regression functions shown in Figure 6.9 just the other way round, i.e. to apply the values (6.2) and (6.5) predicted for the end effects to deduce predictions of the top end content C7 from these Phase II-C regression functions. This is done in Figure 6.10. The following predictions of C7 are obtained:

- Predicted top end content C7 for the 30 MWd/kg U axial burn-up profile at $d_{CR} = 0$:

$$C7(d_{CR} = 0; \hat{B} = 30\ \text{MWd/kg U})_{predicted} \approx \begin{cases} 0.775 \ \text{from Figure 6.8} \\ 0.764 \ \text{from Figure 6.10} \end{cases} \tag{6.6}$$

- Predicted top end content C7 for the 50 MWd/kg U axial burn-up profile at $d_{CR} = 0$:

$$C7(d_{CR} = 0; \hat{B} = 50\ \text{MWd/kg U})_{predicted} \approx 0.916 \ \text{(see Figure 6.10).} \tag{6.7}$$

7 Benchmark contributions

A total of 14 contributions were made to the Phase II-E benchmark exercise, by 10 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-E exercise are given in Table 7.1. 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-E benchmark exercise are presented and evaluated in the following sections. However, as indicated in Table 7.1, one of the contributors made his own depletion calculations. Since the benchmark specification [6] does not include any information about the depletion parameters used to determine the sets of isotopic number densities presented in Appendices II and III of the report on hand it is hardly surprising that this contributor's results are incompatible with those of all the other contributors. Therefore, the results from this contributor are not included in the following sections but are presented in Appendix V.

8 Results from the contributors to the Phase II-E benchmark exercise

8.1 Predicted neutron multiplication factors

The predicted neutron multiplication factor mean values and their respective standard deviations are presented in Tables 8.1 through 8.8. As appears from these tables, in addition to the CR insertion depths specified in Section 3.2.2, some calculations were made for CR insertion depths of 125.40 cm, 156.75 cm, 167.20 cm, and 219.45 cm.

The predicted neutron multiplication factor mean values are plotted in Figures 8.1 through 8.4. As appears from these figures, all the contributors have predicted similar neutron multiplication factor mean values (k_{eff} mean values): All these values fall in a band having a width in k_{eff} of less than 0.015. However, it should be noted that “similar” k_{eff} mean values do not mean “compatible” k_{eff} mean values, i.e. mean values which have one and the same expectation [15]. In fact, for each of the benchmark cases for which k_{eff} mean values $k_{eff}(d_{CR})$ have been provided from different contributors it is obvious (as appears from Tables 8.1 through 8.8) that these mean values would fail a statistical compatibility check. This may be mainly due to the fact that none of the contributors to the Phase II-E benchmark has given any information about the biases in k_{eff} that are characteristic of the contributors’ calculation procedures with respect to the evaluated benchmark cases.

The observation that all the k_{eff} mean values fall in a band having a width in k_{eff} of less than 0.015 does not reveal anything about the spread of the end effects resulting, according to Equation (2.3), from the contributors’ neutron multiplication factor outcomes. Further analysis is required to examine the results in more detail.

As appears from Appendix III, it has been recommended in the benchmark specification [6] to perform more than one calculation run per benchmark case. Accordingly, for all those contributors who followed this recommendation the results presented in Tables 8.1 through 8.8 and Figures 8.1 through 8.4 are mean values and related standard deviations derived from the outcomes of the respective individual calculation runs. To make these outcomes and the evaluation of these outcomes available, links are set in Appendix IV of the adobe-acrobat-version (pdf file) of the report on hand leading to the respective EXCEL-files described in Section 5.2.

8.2 Predicted fission density distributions

Predictions on the fission density distributions have been performed by three contributors to the Phase II-E benchmark exercise. The evaluated fission density values and their respective standard deviations (if available) are listed in Tables 8.9 through 8.68. As appears from Tables 8.22, 8.37, 8.52, and 8.67, in addition to the CR insertion depths specified in Section 3.2.2, fission densities were also calculated for a CR insertion depth of 156.75 cm.

The results listed under the companies’ names “Tractebel” and “AREVA NP” in Tables 8.9 through 8.68 are mean values and related standard deviations derived from four or three different calculation runs per benchmark case. To make the outcomes of these different runs available, links are set in Appendix IV of the adobe-acrobat-version (pdf file) of the report on hand leading to the files containing these outcomes.

The results presented in Tables 8.9 through 8.68 are plotted in Figures 8.5 through 8.64. As appears from these figures, the fission densities predicted by the contributors for the uniform burn-up distributions are very similar in all parts of the fuel zone; the fission densities predicted for the axial burn-up profiles are close together in the centre zone and the top end region of the fuel zone. The fission density results will be examined in more detail in Section 9.4.2. The results obtained from the different contributors for the axial burn-up profiles will be combined by using an adequate weighing procedure; the fission density distributions thus obtained will then be analysed as described at the end of Section 2.2.6.

9 Evaluation of the results obtained from the contributors to the Phase II-E benchmark exercise

"Evaluation of the results" means application of statistical methods to the results. Mathematical statistics, which is a branch of applied mathematics that deals with statistics, has its own terminology. This terminology has already been discussed at the beginning of Section 6 in [4]; the definitions mentioned there continue to apply to the evaluation of the results described in the following sections.

9.1 Spread of the calculated neutron multiplication factors

The spread of the neutron multiplication factors presented in Tables 8.1 through 8.8 and Figures 8.1 through 8.4 has already been mentioned in Section 8.1. The spread of the predicted k_{eff} values is now expressed in terms of the relative deviation:

$$\Delta_{ij} = \frac{(k_{eff})_{ij}}{(\bar{k}_{eff})_j} - 1 \qquad (9.1)$$

of the contributors' k_{eff} values $(k_{eff})_{ij}$ from the respective arithmetic mean values:

$$(\bar{k}_{eff})_j = \frac{1}{n_{Cj}} \sum_{i=1}^{n_{Cj}} (k_{eff})_{ij}\,, \qquad (9.2)$$

$(\bar{k}_{eff})_j :=$ arithmetic mean of the j-th benchmark case,

$(k_{eff})_{ij} :=$ sample average of the k_{eff} results obtained from the i-th contributor for the j-th benchmark case (see Tables 8.1, 8.3, 8.5, and 8.7),

$n_{Cj} :=$ number of contributions to the j-th benchmark case (ibid.).

The resultant arithmetic average values (9.2) have already been given in Tables 8.1 through 8.8, together with their respective standard deviations $s\left((\bar{k}_{eff})_j\right)$ obtained according to Equation (9.3),

$$s\left((\bar{k}_{eff})_j\right) = \frac{1}{\sqrt{n_{Cj}}} \sqrt{\hat{\sigma}^2\left((\bar{k}_{eff})_j\right)} \qquad (9.3)$$

with the estimator

$$\hat{\sigma}^2\left((\bar{k}_{eff})_j\right) = \frac{1}{n_{Cj} - 1} \sum_{i=1}^{n_{Cj}} \left((k_{eff})_{ij} - (\bar{k}_{eff})_j\right)^2 \qquad (9.4)$$

of the variance $\sigma^2\left((\bar{k}_{eff})_j\right)$ of the estimate $(\bar{k}_{eff})_j$.

The relative deviations obtained according to Equation (9.1) are listed in Tables 9.1 through 9.4 and are depicted in Figures 9.1 through 9.4. As appears from these figures, the relative deviations (9.1) are falling in:

- a band ranging from about - 0.5% to about + 0.7% in case of the axial burn-up profile of 30 MWd/kg U average burn-up;
- a band ranging from about - 0.5% to about + 0.9% in case of assuming the average burn-up of 30 MWd/kg U uniformly distributed;

- a band ranging from about - 0.5% to about + 1.0% in case of the axial burn-up profile of 50 MWd/kg U average burn-up;
- a band ranging from about - 0.5% to about + 1.4% in case of the uniform distribution of the burn-up of 50 MWd/kg U.

The width of the band of relative deviations seems to increase with increasing average burn-up and seems to become somewhat broader when changing from the inhomogeneous to the uniform distribution of the average burn-up. However, it is striking that in case of the uniform burn-up distribution in particular one contribution, the contribution from "Tractebel", has a significant higher relative deviation amount $|\Delta_{ij}|$ than all the other contributions. With the exception of the results from "TN International" all the other relative deviation outcomes (9.1) fall in a band the breadth of which is not greater than 0.8%.

Tractebel has used MCNP5, version 1.40, with ENDF/B-V cross-sections mainly (see Table 7.1). MCNP5 version 1.40 results were also provided by ORNL and AREVA but these results were obtained with more recent cross-section libraries (ENDF/B-VI.6 and LANL/T-16, respectively, see Table 7.1).

Taking the results $(\bar{k}_{eff})_j$ in Equation (9.1) as reference values and not as statistics (i.e. as random values) the standard deviations $s(\Delta_{ij})$ of a relative deviation Δ_{ij} is estimated by the expression (9.5),

$$s(\Delta_{ij}) = \frac{1}{(\bar{k}_{eff})_j} \, s(k_{eff})_{ij}, \tag{9.5}$$

$s(k_{eff})_{ij} :=$ standard deviation of the value $(k_{eff})_{ij}$, see Tables 8.2, 8.4, 8.6, and 8.8.

Taking the results $(\bar{k}_{eff})_j$ as mere reference values may be justified by the fact that, as mentioned in Section 8.1, the contributors' results $(k_{eff})_{ij}$ are not bias-corrected and turn out to be incompatible, therefore. Consequently, the results $(\bar{k}_{eff})_j$ are not unbiased estimates of the respective benchmark k_{eff} values.

If the contributors' results $(k_{eff})_{ij}$ were bias-corrected and if it were therefore justified due to physics arguments to expect these results as being compatible then it would be adequate to use the weighted mean value for $(\bar{k}_{eff})_j$ in Equation (9.1) instead of the arithmetic mean (9.2), [15]. The weighted mean is given, as well-known, by the expression:

$$(\hat{k}_{eff})_j = \frac{\sum_{i=1}^{n_{Cj}} s^{-2}(k_{eff})_{ij} \cdot (k_{eff})_{ij}}{\sum_{i=1}^{n_{Cj}} s^{-2}(k_{eff})_{ij}},$$

and the related standard deviation is given by the expression:

$$s(\hat{k}_{eff})_j = \sqrt{\frac{1}{\sum_{i=1}^{n_{Cj}} s^{-2}(k_{eff})_{ij}}} \,.$$

Instead of Equation (9.5) one would therefore obtain by means of the approximate variance formulae [15]:

$$\hat{s}(\Delta_{ij}) \approx$$

$$\approx \sqrt{\left(\frac{\partial \Delta_{ij}}{\partial (k_{eff})_{ij}}\right)^2 s^2(k_{eff})_{ij} + \left(\frac{\partial \Delta_{ij}}{\partial (\hat{k}_{eff})_j}\right)^2 s^2(\hat{k}_{eff})_j + 2\left(\frac{\partial \Delta_{ij}}{\partial (k_{eff})_{ij}}\right)\left(\frac{\partial \Delta_{ij}}{\partial (\hat{k}_{eff})_j}\right)\mathrm{cov}\left((k_{eff})_{ij},(\hat{k}_{eff})_j\right)}$$

$$\approx \frac{1}{(\hat{k}_{eff})_j}\, s(k_{eff})_{ij} \sqrt{1 - \frac{s^2(\hat{k}_{eff})_j}{s^2(k_{eff})_{ij}} \cdot \left(1 - \Delta_{ij}^2\right)} \,.$$

Since $\Delta_{ij}^2 << 1$ and, by definition of $s(\hat{k}_{eff})_j$ (see above), $s(\hat{k}_{eff})_j < s(k_{eff})_{ij}, \forall i$, one would have

$$\hat{s}(\Delta_{ij}) < \frac{1}{(\hat{k}_{eff})_j}\, s(k_{eff})_{ij} \,.$$

As follows from Tables 8.1 through 8.8, the standard deviations (9.5) of the positive Δ_{ij} values with the highest amounts $|\Delta_{ij}|$ (contributions from Tractebel and/or TN International, see Figures 9.1 through 9.4) are bounded as follows:

- In case of the axial burn-up profile of 30 MWd/kg U average burn-up:
  $s(\Delta_{ij}) < 0.0089\%$ (Tractebel) or $s(\Delta_{ij}) < 0.026\%$ (TN International)
- In case of the uniform burn-up distribution of 30 MWd/kg U: $s(\Delta_{ij}) < 0.012\%$ (Tractebel)
- In case of the axial burn-up profile of 50 MWd/kg U average burn-up:
  $s(\Delta_{ij}) < 0.011\%$ (Tractebel)
- In case of the uniform burn-up distribution of 50 MWd/kg U: $s(\Delta_{ij}) < 0.0077\%$ (Tractebel)

The standard deviations (9.5) of the negative Δ_{ij} values with the highest amounts $|\Delta_{ij}|$ (VTT and/or ORNL SCALE 5.1, see Figures 9.1 through 9.4) are bounded as follows:

- In case of the axial burn-up profile of 30 MWd/kg U average burn-up:
  $s(\Delta_{ij}) < 0.028\%$ (VTT) or $s(\Delta_{ij}) < 0.0081\%$ (ORNL SCALE 5.1)
- In case of the uniform burn-up distribution of 30 MWd/kg U:
  $s(\Delta_{ij}) < 0.027\%$ (VTT) or $s(\Delta_{ij}) < 0.0079\%$ (ORNL SCALE 5.1)
- In case of the axial burn-up profile of 50 MWd/kg U average burn-up:
  $s(\Delta_{ij}) < 0.029\%$ (VTT) or $s(\Delta_{ij}) < 0.0091\%$ (ORNL SCALE 5.1)
- In case of the uniform burn-up distribution of 50 MWd/kg U:
  $s(\Delta_{ij}) < 0.03\%$ (VTT) or $s(\Delta_{ij}) < 0.0089\%$ (ORNL SCALE 5.1)

VTT used the MCNP4C code with MCB/JEFF 2.2 continuous-energy neutron cross-sections. Table 9.5 gives an overview of the MCNP versions and the nuclear data libraries applied by different contributors to some of the Phase II-E benchmark cases. The respective k_{eff} results from VTT, ORNL and AREVA are close together, whereas the results from Tractebel are significantly higher.

There are four contributions providing results obtained by means of different versions and/or cross-section processing modules of the SCALE system:

- BfS used versions 4.4a and 5.0 of the SCALE system together with the ENDF/B-V based 238-group cross-section library of these SCALE versions. In case of version 4.4a the module-sequence BONAMI – NITAWL II has been employed for the cross-section processing, whereas in case of version 5.0 the sequence BONAMI – NITAWL III has been used for this purpose (see Table 7.1).
- In AREVA's contribution version 5.1 was applied in combination with the ENDF/B-V derived 44-group cross-section library of the SCALE 5.1 system. The cross-section processing was performed by means of the BONAMI – NITAWL III sequence.
- ORNL used also version 5.1 of the SCALE system but in combination with the ENDF/B-VI.7 based 238-group cross-section library V6-238 which allows using the more advanced cross-section-processing-module sequence BONAMI – CENTRM – PMC instead of the BONAMI – NITAWL sequence.

All the SCALE k_{eff} results are presented in Figures 9.5 through 9.8. As appears from these figures, use of the combination SCALE 5.1 plus 44-group cross-section library results in the highest SCALE k_{eff} values for all the benchmark cases analysed, whereas the application of the combination SCALE 5.1 plus V6-238 library always leads to the lowest k_{eff} results. The dashed line in Figures 9.5 through 9.8 gives the k_{eff} mean (9.2) resulting from all the contributions. Only the SCALE 5.1 plus 44-group library k_{eff} results are above the mean (9.2). In fact, as appears from Figures 9.1 through 9.4, if one ignores the results from Tractebel and TN International the k_{eff} values obtained with the SCALE 5.1-plus-44-group-library combination turn out to be the highest ones.

It should be noted that the spread of the k_{eff} results observed here does not reveal anything about the amount of the calculational biases which are characteristic of the calculation procedures used by the contributors to the Phase II-E benchmark because no validation calculations have been performed for the benchmark cases. These cases are theoretical benchmarks. Accordingly, the observed spread of the k_{eff} results does only suggest that the applied calculation procedures probably differ in their bias values being characteristic of these procedures with respect to the different benchmark cases.

9.2 Evaluation of the end effect

Despite the spread of the contributors' k_{eff} results, the qualitative behaviour of k_{eff} as a function of the CR insertion depth, which has been predicted in Section 6.1, is observed by each of the contributors, as appears from Figures 8.1 through 8.4:

- At the beginning of CR insertion the neutron multiplication factor $k_{eff}(\mathrm{ABP})$ of the axial burn-up profiles (see Figures 8.1 and 8.3) increases rapidly with increasing CR insertion, the more rapidly the higher the average burn-up is.

- Then, with further increasing CR insertion depth d_{CR} the increase in $k_{eff}(ABP)$ slows down more and more: For 30 MWd/kg U this slowing down starts at about $d_{CR} = 40$ cm, whereas for 50 MWd/kg U this slowing down starts already at about $d_{CR} = 30$ cm.
- Finally, when d_{CR} reaches values which are still significantly lower than the half of the amount of the active fuel length $k_{eff}(ABP)$ does not increase anymore: For 30 MWd/kg U $k_{eff}(ABP)$ remains constant for $d_{CR} > 120$ cm, and for 50 MWd/kg U $k_{eff}(ABP)$ remains constant for $d_{CR} > 95$ cm.
- In contrast to the results obtained for $k_{eff}(ABP)$ it is observed, as has been predicted, that the neutron multiplication factor $k_{eff}(UD)$ of the uniform burn-up distribution is less sensitive to CR insertion depths often occurring in practice, the lower the average burn-up is: It is observed that $k_{eff}(UD)$ remains virtually constant:
  - for $0\text{ cm} \le d_{CR} < 30\text{ cm}$ at 30 MWd/kg U average burn-up (see Figure 8.2) and
  - for $0\text{ cm} \le d_{CR} \le 20\text{ cm}$ at 50 MWd/kg U average burn-up (see Figure 8.4).
- For higher d_{CR} values $k_{eff}(UD)$ increases with increasing d_{CR} value till full CR insertion is reached, even though the increase in $k_{eff}(UD)$ slows down more and more with increasing d_{CR} at higher CR insertion depths.

Therefore, as confirmed by all the results from the contributors to the Phase II-E benchmark (see Figures 9.9 and 9.10), the end effect $\Delta k(d_{CR})$ as a function of d_{CR} behaves qualitatively just as has been described in Section 6.1: At the beginning, at small d_{CR} values, $\Delta k(d_{CR})$ increases very rapidly with increasing d_{CR}, reaches a maximum at a relatively low d_{CR} value which tends to be the lower, the higher the average burn-up is, and slows down more and more with further increasing d_{CR} and reaches at full CR insertion $d_{CR} = L$ a value which is, as expected, significantly lower than the value obtained for $d_{CR} = 0$. For the 30 MWd/kg U average burn-up Phase II-E benchmark case the end effect Δk, clearly positive at $d_{CR} = 0$, becomes even negative for $d_{CR} = L$, (see Figure 9.9).

9.2.1 Spread of the calculated end effects

The contributors' average $\Delta k(d_{CR})$ values presented in Figures 9.9 and 9.10 are listed in Tables 9.6 and 9.9, respectively. The respective standard deviations of these mean values are estimated according to Equation (9.6):

$$s(\Delta k(d_{CR})) = \sqrt{s^2(k_{eff}(ABP|d_{CR})) + s^2(k_{eff}(UD(\hat{B}_{ABP})|d_{CR}))}, \tag{9.6}$$

$s(k_{eff}(ABP|d_{CR})) :=$ standard deviation of $k_{eff}(ABP|d_{CR})$, see Tables 8.2 and 8.6,

$s(k_{eff}(UD(\hat{B}_{ABP})|d_{CR})) :=$ standard deviation of $k_{eff}(UD(\hat{B}_{ABP})|d_{CR})$, see Tables 8.4 and 8.8.

Equation (9.6) follows from Equation (2.3). The results obtained from Equation (9.6) are given in Tables 9.7 and 9.10.

The spread of the end effect values presented in Tables 9.6 and 9.9 and depicted in Figures 9.9 and 9.10, respectively, is expressed in terms of the absolute deviation:

$$\Delta_{ij}(\Delta k) = (\Delta k)_{ij} - \overline{(\Delta k)_j} \tag{9.7}$$

of the contributors' predicted end effects $(\Delta k)_{ij}$ from the respective average values:

$$\overline{(\Delta k)_j} = \frac{1}{n_{Cj}} \sum_{i=1}^{n_{Cj}} (\Delta k)_{ij} \, , \tag{9.8}$$

$\overline{(\Delta k)_j}$:= mean value for the j-th benchmark case,

$(\Delta k)_{ij}$:= end effect values predicted by the contributors to the benchmark (more precisely: end effect values following from the k_{eff} results predicted by the contributors, see Tables 8.1, 8.3, 8.5, and 8.7),

n_{Cj} := number of contributions to the j-th benchmark case.

The resultant average values (9.8) are given in Tables 9.6 and 9.9, together with the respective standard deviations ("sqrt of the variance")

$$s_j(\Delta k) = \frac{1}{\sqrt{n_{Cj} - 1}} \sqrt{\sum_{i=1}^{n_{Cj}} \left[\Delta_{ij}(\Delta k)\right]^2} \, . \tag{9.9}$$

The deviations (9.7) are listed in Tables 9.8 and 9.11 and are depicted in Figures 9.11 and 9.12, respectively.

As stated in Sections 8.1 and 9.1, the results delivered by the Phase II-E contributors for the neutron multiplication factors $k_{eff}(ABP|d_{CR})$ and $k_{eff}(UD(\hat{B}_{ABP})|d_{CR})$ are not bias-corrected. However, since the end effect values $(\Delta k)_{ij}$ follow from the contributors' $k_{eff}(ABP|d_{CR})$ and $k_{eff}(UD(\hat{B}_{ABP})|d_{CR})$ results according to Equation (2.3), the question naturally arises whether the resulting $(\Delta k)_{ij}$ values may be supposed to be unbiased or not. The question cannot really be answered here for the following reasons: It has to be considered that whatever the CR insertion depth is, $k_{eff}(ABP|d_{CR})$ is determined by the top end region of the fuel zone in an always significantly higher degree than $k_{eff}(UD(\hat{B}_{ABP})|d_{CR})$ (compare the set of Figures 8.5a through 8.19a with the set of Figures 8.20 through 8.34 as well as the set of Figures 8.35a through 8.49a with the set of Figures 8.50 through 8.64). For those CR insertion depths d_{CR}, in particular, for which the highest end effects are observed (see Figures 9.9 and 9.10), the average burn-up of the fuel zone's top end region involved in determining $k_{eff}(ABP|d_{CR})$ is significantly lower than the total average burn-up $\hat{B}_{ABP}$. It cannot be excluded a priori that the bias of the calculated k_{eff} values changes with burn-up. Therefore, the end effect values $(\Delta k)_{ij}$ obtained according to Equation (2.3) may still be biased. However, it seems to be reasonable to assume that the bias in $(\Delta k)_{ij}$ is small since the difference in the biases of $k_{eff}(ABP|d_{CR})$ and $k_{eff}(UD(\hat{B}_{ABP})|d_{CR})$ should be small, the smaller the more d_{CR} increase beyond that d_{CR} value which leads to the highest end effect. This is due to the fact that the more d_{CR} increases beyond the d_{CR} value leading to the highest end effect, the larger the fuel zone's top end region involved in determining $k_{eff}(ABP|d_{CR})$ becomes (compare Figures 8.5a through 8.19a with Figures 8.20 through 8.34 as well as Figures 8.35a through 8.49a with Figures 8.50 through 8.64[13]), and the closer therefore is the average burn-up of the involved top end region to the total average burn-up $\hat{B}_{ABP}$. It seems reasonable, therefore, to assume that the bias in a contributor's $(\Delta k)_{ij}$ value, if there is some bias, decreases with increasing CR insertion depth d_{CR} for d_{CR} values greater than the d_{CR} value leading to the highest end effect. If so, then it seems reasonable to expect that the spread (9.7) of the contributor's end effect values decreases for such d_{CR} values. This is in fact observed, as appears from Figures 9.11 and 9.12.

Therefore, since it cannot be excluded that the contributors' $(\Delta k)_{ij}$ results are still biased, the arithmetic mean formula Equation (9.8), instead of the weighted mean procedure, has been used to calculate a mean value $\overline{(\Delta k)}_j$ from the contributors' $(\Delta k)_{ij}$ results. Since it is reasonable to assume that the biases of these results are small, the calculated arithmetic value (9.8) is regarded as "sample mean".

9.2.2 Comparison of the results with the predictions for the case of no control rod insertion

Predictions of the end effect for the case of no control rod insertion ($d_{CR} = 0$) have been made in Section 6.2:

- For the 30 MWd/kg U axial burn-up profile an end effect of about 0.01 has been predicted [see Equation (6.2)], and
- for the 50 MWd/kg U profile an end effect of about 0.04 has been predicted [see Equation (6.5)].

These predictions are perfectly confirmed as appears from Tables 9.6 and 9.9:

- For the 30 MWd/kg U axial burn-up profile, the sample mean (9.8) and the related standard deviation (9.9) amount to:

$$\overline{\Delta k} \pm s = 0.0096 \pm 0.0012 . \qquad (9.10)$$

- For the 50 MWd/kg U axial burn-up profile, the sample mean (9.8) and the related standard deviation (9.9) are:

$$\overline{\Delta k} \pm s = 0.0401 \pm 0.0019 . \qquad (9.11)$$

These perfect agreements between predictions and outcomes demonstrate, keeping in mind all the preconditions described in Section 6.2 [4], the power of the relations established in Appendix VI [4], for the dependence of the end effect on the asymmetry, the local asymmetry, and the average burn-up of an axial burn-up profile.

9.2.3 Dependence of the end effect on the CR insertion depth

Figure 9.13 shows the sample mean values (9.8) together with the related standard deviations (9.9) in form of error bars $\Delta k \pm s$ as a function of the CR insertion depth d_{CR} for the case of the

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[13] It is more convenient to look at Figures 9.51 through 9.54.

50 MWd/kg U axial burn-up profile (see Table 9.9). As depicted in this figure, the functional dependence of the end effect on the CR insertion depth can be modelled as follows:

$$\Delta k\left(d_{CR}\middle|\hat{B}_{ABP}\right)=\begin{cases}P_S\left(d_{CR}\middle|\hat{B}_{ABP}\right)+p(d_{CR})\ \text{for}\ 0\le d_{CR}\le d_B\\ E(d_{CR})\ \text{for}\ d_B<d_{CR}\le L\end{cases}. \tag{9.12}$$

The term $P_S\left(d_{CR}\middle|\hat{B}_{ABP}\right)$ is called "Planck shape" because it is defined by the formula Equation (9.13),

$$P_S\left(d_{CR}\middle|\hat{B}_{ABP}\right)=\frac{\beta\cdot d_{CR}^{\gamma}}{\exp\left(\lambda(\hat{B}_{ABP})\cdot d_{CR}\right)-\xi(\hat{B}_{ABP})} \tag{9.13}$$

$$\text{with}\ \gamma=3\ \text{and}\ \xi(\hat{B}_{ABP})=\begin{cases}0.177\ \text{for}\ \hat{B}_{ABP}=30\ \text{MWd/kg U}\\ 0.18432\ \text{for}\ \hat{B}_{ABP}=50\ \text{MWd/kg U}\end{cases}. \tag{9.14}$$

The term $p(d_{CR})$ in Equation (9.12) is given by a parabola:

$$p(d_{CR})=\sum_{i=0}^{2}a_i d_{CR}^{i}\ . \tag{9.15}$$

As appears from Figure 9.13, there is a CR insertion depth d_B defined such that the parabola becomes inadequate for $d_{CR}>d_B$. For d_{CR} values $d_B<d_{CR}\le L$ an exponential model $E(d_{CR})$ is therefore used to describe the functional dependence of the end effect Δk on d_{CR} :

$$E(d_{CR})=\alpha\cdot\exp\left(-\eta\cdot\sqrt{d_{CR}}\right) \tag{9.16}$$

$$\text{with}\ \alpha=\Delta k(d_{CR}=0)\ \text{and}\ \eta=\frac{1}{\sqrt{L}}\cdot\ln\left(\frac{\Delta k(d_{CR}=0)}{\Delta k(d_{CR}=L)}\right)\ \text{for}\ \frac{\Delta k(d_{CR}=0)}{\Delta k(d_{CR}=L)}>0\ . \tag{9.17}$$

For d_{CR} values $0\le d_{CR}\le d_B$ the model (9.12):

$$\Delta k\left(d_{CR}\middle|\hat{B}_{ABP}\right)-P_S\left(d_{CR}\middle|\hat{B}_{ABP}\right)-p(d_{CR})=0, \tag{9.18}$$

describes a system of non-linear equations. To solve this system, Brent's method [16] [17] is used in the report on hand. To be able to employ this method some conditions have to be determined:

- It obviously follows from Equations (9.12) through (9.15) that the coefficient a_0 of the parabola (9.15) is given by the value of the end effect at $d_{CR}=0$:

$$a_0=\Delta k\left(d_{CR}=0\middle|\hat{B}_{ABP}\right). \tag{9.19}$$

- As appears from Figure (9.13), for $d_{CR}\ge d_B$, the contribution of the Planck shape in Equation (9.12) or Equation (9.18) is negligible. Therefore it follows that the coefficient a_1 of the parabola (9.15) can be calculated by using Equation (9.20),

$$a_1=\frac{1}{d_B}\cdot\left(\Delta k(d_B)-a_0\right)-a_2\cdot d_B, \tag{9.20}$$

$\Delta k(d_B)$:= end effect at d_B.

- Let d_m be the d_{CR} value at which the end effect has its maximum (see Figure 9.13). The value of the parabola (9.15) at this d_{CR} value is:

$$p(d_m) = a_0 + a_1 d_m + a_2 d_m^2 . \tag{9.21}$$

Therefore, the contribution of the Planck shape (9.13) to the end effect $\Delta k(d_m)$ at d_m amounts to:

$$P_S(d_m) = \Delta k(d_m) - p(d_m), \tag{9.22}$$

$\Delta k(d_m) :=$ maximum end effect.

- Because of the formula (9.13) the contribution (9.22) must be equal to:

$$P_S\left(d_m \middle| \hat{B}_{ABP}\right) = \frac{\beta \cdot d_m^{\gamma}}{\exp\left(\lambda(\hat{B}_{ABP}) \cdot d_m\right) - \xi(\hat{B}_{ABP})} \tag{9.23}$$

The first derivative of the total function (9.12) must be zero at $d_{CR} = d_m$,

$$\left.\frac{\partial \Delta k(d_{CR})}{\partial d_{CR}}\right|_{d_{CR}=d_m} = 0 = \frac{\beta\gamma \cdot d_m^{\gamma-1}}{\exp(\lambda \cdot d_m) - \xi} - \frac{\beta \cdot d_m^{\gamma} \cdot \lambda \cdot \exp(\lambda \cdot d_m)}{\left[\exp(\lambda \cdot d_m) - \xi\right]^2} + a_1 + 2a_2 \cdot d_m . \tag{9.24}$$

Evaluation of Equations (9.23) and (9.24) results in an expression for λ:

$$\lambda = \frac{\dfrac{\gamma}{d_m} \cdot P_S(d_m) + a_1 + 2a_2 d_m}{P_S(d_m) \cdot \left[1 + \xi \cdot \dfrac{P_S(d_m)}{\beta \cdot d_m^{\gamma}}\right]} \tag{9.25}$$

As follows from Equations (9.14), (9.19) through (9.22), and (9.25), one is confronted with the task of solving the system (9.18) of non-linear equations for the two remaining unknowns β and a_2 from some initial values (starting values) β_{in} and $(a_2)_{in}$ by means of Brent's method. Therefore, two equations of the form (9.18) are required. The first equation is given by using the maximum of the end effect:

$$\Delta k(d_m) - P_S\left(\beta \middle| d_m\right) - p\left(a_2 \middle| d_m\right) = 0 . \tag{9.26}$$

A second equation can be obtained by adopting the constraint that the end effect amounts to $\Delta k(d_C)$ at $d_{CR} = d_C$ (see Figure 9.13):

$$\Delta k(d_C) - P_S\left(\beta \middle| d_C\right) - p\left(a_2 \middle| d_C\right) = 0 . \tag{9.27}$$

The input data for solving the system of Equations (9.26) and (9.27) are listed in Table 9.12. As appears from this table, in case of the 30 MWd/kg U axial burn-up profile, the total active length L can be used for d_B, so that Equation (9.16) is not required for this case.

As depicted in Figure 9.13, due to the fact that the end effect has a maximum at d_m a pair of CR insertion depths (d_{EL}, d_{ER}), $d_{EL} < d_m$ and $d_{ER} > d_m$, can be chosen such that $\Delta k(d_{EL}) = \Delta k(d_{ER})$.

This has not been used in the report on hand, but it can be used, if one wants to treat the parameter $\xi(\hat{B}_{ABP})$ as an additional unknown[14)].

Figures 9.14 and 9.15 show the model functions (9.12) obtained by solving the system of Equations (9.26) and (9.27). The resulting or chosen parameter values of the respectively associated Planck shapes (9.13) and parabolas (9.15) are listed in Table 9.13. As appears from Figures 9.14 and 9.15, the resultant model functions yield adequate descriptions of the end effect as a function of the CR insertion depth d_{CR}. The question naturally arises whether these two model functions are related to each other. This question immediately suggests itself since it has been observed in [4] that the model functions describing the dependence of the end effect on the axial burn-up profile's asymmetry parameter $S\kappa$ ($\kappa = 6$ in [4]) for average burn-up values of 32 MWd/kg U and 50 MWd/kg U are closely related: It has been found that the end effect $\Delta k(B50)$ for the 50 MWd/kg U average burn-up profiles can be derived from the model function r_{B32} describing the end effect of the 32 MWd/kg U profiles as a function of $S\kappa$,

$$\Delta k(B50) \approx r_{B32} \cdot f + \delta k \text{, (Phase II-C, [4]),} \tag{9.28}$$

and that the end effect $\Delta k(B32)$ for the 32 MWd/kg U profiles can be derived from the model function r_{B50} describing the end effect of the 50 MWd/kg U profiles as a function of $S\kappa$:

$$\Delta k(B32) \approx (r_{B50} - \delta k) \cdot \frac{1}{f} \text{, (Phase II-C, [4]),} \tag{9.29}$$

where f and δk in Equations (9.28) and (9.29) are given by:

$$f_{II-C} = \frac{50 \text{ MWd/kg U}}{32 \text{ MWd/kg U}} \text{, (Phase II-C, [4]),} \tag{9.30}$$

and, respectively,

$$\delta k_{II-C} = 0.02, \text{ (Phase II-C, [4]).} \tag{9.31}$$

The question in particular arises whether relations such as (9.28) and (9.29) which are determined by the ratio of the average burn-up values and a scaling parameter such as (9.31) can also be derived from a comparison of the two model functions depicted in Figures 9.14 and 9.15.

9.2.4 Observations on the dependence of the end effect on the average burn-up

In Figure 9.16, the two model functions are plotted for the CR insertion depths $0 \le d_{CR} \le d_B$ where $d_B = L = 365.76$ cm for the $\hat{B}_{ABP} = 30$ MWd/kg U case and $d_B = 219.54$ cm for the $\hat{B}_{ABP} = 50$ MWd/kg U case (see Table 9.12). The d_{CR} axis for the 50 MWd/kg U case is therefore stretched.

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14) It turned out that the choice of two unknowns, β and a_2, is sufficient for obtaining model functions (9.12) describing the end effect as a function of the CR insertion depth. Note that it has not been tested whether or not treating ξ as an additional unknown leads to numerical difficulties in using Brent's method.

The stretching factor is just:

$$f_S = \frac{d_B(30\ \mathrm{MWd/kg\ U})}{d_B(50\ \mathrm{MWd/kg\ U})} = \frac{365.76\ \mathrm{cm}}{219.54\ \mathrm{cm}} = 1.66603 \approx \frac{50\ \mathrm{MWd/kg\ U}}{30\ \mathrm{MWd/kg\ U}} = 1.66667 = f_{II-E} \equiv f \tag{9.32}$$

Note that $d_B(50\ \mathrm{MWd/kg\ U}) = 219.54\ \mathrm{cm}$ was not arbitrarily chosen. This d_{CR} value is just the locus of the intersection of the parabola (9.15) for the 50 MWd/kg U case with the exponential function (9.16) for this case, (see Figures 9.13 and 9.15).

Figure 9.16 suggests that the two model functions should be closely related for $0 \le d_{CR} \le d_B$. In fact, in addition to the observation (9.32), which can also be written:

$$f_S^{-1} = 0.60023 \approx f^{-1} = 0.60000, \tag{9.33}$$

the following relations are found:

- The ratio of the loci of the end effect maxima (see Table 9.12) amounts to

$$r_m = \frac{d_m(50\ \mathrm{MWd/kg\ U})}{d_m(30\ \mathrm{MWd/kg\ U})} = \frac{26.12\ \mathrm{cm}}{46.059\ \mathrm{cm}} = 0.5671 \approx f^{-1} = 0.6000 \tag{9.34}$$

- Relations such as (9.28) and (9.29) with (9.30) and (9.31) cannot directly be derived here because the axial burn-up profiles analysed here have different top end parameter values S7, see Equation (2.13). However, since the end effect predicted for the 50 MWd/kg U axial burn-up profile at $d_{CR} = 0$ has been confirmed (compare Equation (6.5) with the result (9.11)), it can be deduced from Figure 6.7 that for the 50 MWd/kg U profile an effective top end parameter of 0.1545 has to be taken for the case $d_{CR} = 0$ if the coupling parameter g is set to zero. As follows from Figure 6.6, with this effective top end parameter an end effect of $(30/32)\cdot 0.129324 = 0.12124$ is to be expected for a 30 MWd/kg U profile at $d_{CR} = 0$. In order to make a comparison between the end effects for 30 MWd/kg U and 50 MWd/kg U at $d_{CR} = 0$ possible, the end effect observed for the 30 MWd/kg U profile has to be corrected by adding a value of:

$$\Delta_{corr}(d_{CR} = 0; \hat{B} = 30\ \mathrm{MWd/kg\ U}) = 2.5535\cdot 10^{-3} \tag{9.35}$$

to the end effect of $9.57065\cdot 10^{-3}$ observed for the 30 MWd/kg U profile at $d_{CR} = 0$:

$$\begin{aligned} &\Delta k(d_{CR} = 0; \hat{B} = 30\ \mathrm{MWd/kg\ U})_{corr} = \\ &= \Delta k(d_{CR} = 0; \hat{B} = 30\ \mathrm{MWd/kg\ U})_{observed} + \Delta_{corr}(d_{CR} = 0; \hat{B} = 30\ \mathrm{MWd/kg\ U}) \\ &= 1.21241\cdot 10^{-2} \end{aligned} \tag{9.36}$$

Using the abbreviations:

$\kappa(30)_0^C = \Delta k(d_{CR} = 0; \hat{B} = 30\ \mathrm{MWd/kg\ U})_{corr}$ and

$\kappa(50)_0 = \Delta k(d_{CR} = 0; \hat{B} = 50\ \mathrm{MWd/kg\ U})$

The following relations are obtained from Equations (9.34) and (9.36) as well as from Table 9.12:

$$\kappa(50)_0 = 4.00508 \cdot 10^{-2} \approx \kappa(30)_0^C \cdot f + \delta = 4.02069 \text{ with } \delta = 0.02 \tag{9.37}$$

and

$$\kappa(30)_0^C = 1.21241 \cdot 10^{-2} \approx (\kappa(50)_0 - \delta) \cdot f^{-1} = 1.20305 \cdot 10^{-2} \text{ with } \delta = 0.02 \tag{9.38}$$

and hence

$$\kappa(30)_0 \equiv \kappa(30)_0^C - \Delta_{corr} = 9.477 \cdot 10^{-3}. \tag{9.39}$$

This estimate is in agreement with the result (9.10), and the estimate (9.37) virtually complies with the result (9.11).

- For CR insertion depths $d_{CR} > 0$ one cannot use the results from [4]. However, for the maximum end effects (see Table 9.12):

$$\kappa(30)_m = \Delta k(d_m = 46.059 \text{ cm}; \hat{B} = 30 \text{ MWd/kg U}) = 2.43250 \cdot 10^{-2}$$

and

$$\kappa(50)_m = \Delta k(d_m = 26.12 \text{ cm}; \hat{B} = 50 \text{ MWd/kg U}) = 5.95984 \cdot 10^{-2}$$

a direct comparison yields:

$$\delta = \kappa(50)_m - f \cdot \kappa(30)_m = 0.0191 \pm 0.0028 \tag{9.40}$$

which is compatible with $\delta = 0.02$.

The standard deviation $s(\delta) = 0.0028$ given in Equation (9.40) is derived from the standard deviations given in Table 9.6 (the value obtained for $d_{CR} = 41.8$ cm is adopted) and Table 9.9, respectively:

$$s(\delta) = \sqrt{(0.00224)^2 + f^2 \cdot (0.00104)^2}.$$

Since the difference (9.40) is compatible with $\delta = 0.02$ one also has for the maximum end effects approximately:

$$\kappa(50)_m \approx \kappa(30)_m \cdot f + \delta \text{ with } \delta = 0.02 \tag{9.41}$$

and

$$\kappa(30)_m \approx (\kappa(50)_0 - \delta) \cdot f^{-1} \text{ with } \delta = 0.02. \tag{9.42}$$

It follows from the relation (9.34) that

$$d_m(30 \text{ MWd/kg U}) \approx f \cdot d_m(50 \text{ MWd/kg U}) = 43.533 \text{ cm}. \tag{9.43}$$

In fact, as appears from Figure 9.17, in contrast to the 50 MWd/kg U model function, the maximum of the 30 MWd/kg U model function cannot be so clearly localised. There might be an uncertainty of up to ± 4 cm in the locus d_m of the maximum, as can be concluded from Figure 9.17. This uncertainty results in an uncertainty of about ± 0.05 in the ratio (9.34):

$$s(r_m) = r_m \frac{s\left(d_m(30\ \mathrm{MWd/kg\ U})\right)}{d_m(30\ \mathrm{MWd/kg\ U})} = 0.5671 \cdot \frac{4\ \mathrm{cm}}{46.059\ \mathrm{cm}} = 0.04925\,. \tag{9.44}$$

Therefore, the ratio r_m, given by Equation (9.34), is compatible with $f^{-1} = 0.6$. This means that one may identify the term f^{-1} in relations (9.41) and (9.42) with the ratio r_m.

- A comparison of the contributions of the parabolas to the maximum end effects:

  $p(30)_m \equiv p(d_m = 46.059\ \mathrm{cm}; \hat{B} = 30\ \mathrm{MWd/kg\ U}) = 7.672805 \cdot 10^{-3}$,

  $p(50)_m \equiv p(d_m = 26.12\ \mathrm{cm}; \hat{B} = 50\ \mathrm{MWd/kg\ U}) = 3.406907 \cdot 10^{-2}$,

  yields

  $$\delta = p(50)_m - f \cdot p(30)_m = 0.02128\,. \tag{9.45}$$

  Keeping in mind that there is some uncertainty in the locus d_m of the maximum of the 30 MWd/kg U model function, the result (9.45) can be regarded as compatible with $\delta = 0.02$.

- As follows from Table 9.13, the ratio of the values $\beta(50\ \mathrm{MWd/kg\ U})$ and $\beta(30\ \mathrm{MWd/kg\ U})$ obtained for the parameter β of the Planck shape (9.13) amounts to:

  $$\frac{\beta(50\ \mathrm{MWd/kg\ U})}{\beta(30\ \mathrm{MWd/kg\ U})} = 7.467617\,. \tag{9.46}$$

  Using the ansatz $f^{\gamma+\varepsilon} = 7.467617$ with $\gamma = 3$ (see Table 9.13) one obtains $\varepsilon = 0.936$ which is close to one. So, one may assume that

  $$\frac{\beta(50\ \mathrm{MWd/kg\ U})}{\beta(30\ \mathrm{MWd/kg\ U})} \approx f^{\gamma+1} = 7.716\,. \tag{9.47}$$

- The ratio of the values $\lambda(50\ \mathrm{MWd/kg\ U})$ and $\lambda(30\ \mathrm{MWd/kg\ U})$ obtained for the parameter λ of the Planck shape (9.13) amounts to

  $$\frac{\lambda(50\ \mathrm{MWd/kg\ U})}{\lambda(30\ \mathrm{MWd/kg\ U})} = 1.69144 \approx f\,. \tag{9.48}$$

- The fixed values chosen for the parameter ξ of the Planck shape (9.13) are slightly different (see Table 9.13). Their ratio amounts to

  $$\frac{\xi(50\ \mathrm{MWd/kg\ U})}{\xi(30\ \mathrm{MWd/kg\ U})} = 1.0414 \tag{9.49}$$

  which is close to one, so that one has

  $$\xi(50\ \mathrm{MWd/kg\ U}) \approx \xi(30\ \mathrm{MWd/kg\ U}) \tag{9.50}$$

In summary, as found in [4], the ratio of the average burn-up values of the selected axial burn-up profiles, $f = 50\ \mathrm{MWd/kg\ U}/30\ \mathrm{MWd/kg\ U}$, and the scaling parameter of $\delta = 0.02$ play significant roles in comparisons of model functions derived from the end effects observed for these axial burn-up profiles.

9.3 Increase in the neutron multiplication factor due to control rod insertion as a function of the control rod insertion depth

As predicted in Section 6.1 and confirmed by the results obtained (see Figures 8.1 and 8.3 as well as Section 9.2), at the beginning of CR insertion the neutron multiplication factor $k_{eff}(ABP)$ of the axial burn-up profiles increases rapidly with increasing CR insertion. Then with further increasing CR insertion the increase in $k_{eff}(ABP)$ slows down more and more. Finally, for CR insertion depths of $d_{CR} \geq L/3$ or somewhat smaller, $k_{eff}(ABP)$ remains constant.

Figure 9.18 shows the increase (2.2) in $k_{eff}(ABP)$ following from the mean values (9.2) of the contributors' results and the respective standard deviations (9.3) (see Tables 8.1 and 8.5, respectively). In addition, the ratio:

$$r_{\delta} = \frac{\delta k_{eff}(d_{CR}; \hat{B} = 50 \text{ MWd/kg U})}{\delta k_{eff}(d_{CR}; \hat{B} = 30 \text{ MWd/kg U})} \tag{9.51}$$

is depicted in Figure 9.18. It is worthwhile to note that this ratio reaches the ratio $f = 50 \text{ MWd/kg U}/30 \text{ MWd/kg U}$ when the CR insertion depth reaches values for which no further increase in $k_{eff}(ABP)$ is obtained.

9.4 Observations on the axial fission density distributions

9.4.1 Fission density distributions for the axially uniform burn-up shapes

As appears from Figures 8.20 through 8.34 for the 30 MWd/kg U case and Figures 8.50 through 8.64 for the 50 MWd/kg U case, the fission densities $\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_{\kappa}$ calculated by the contributors $\kappa = 1, 2, 3$ (i.e. Tractebel, IRSN, AREVA NP) for the volume of the axial zone i ($i = 1,..., m$, see Section 2.2.6) at given CR insertion depth $(d_{CR})_j$ ($j = 1, 2,..., 15$, see Figures 8.20 through 8.34 and 8.50 through 8.64) are very close together. Figures 9.19 and 9.20 summarise the results from AREVA NP, now normalised as given by Equation (9.52):

$$\left[\rho_{\ell}^{FD}\left((d_{CR})_j\right)\right]_{normalized} = \frac{\left[\rho_{\ell}^{FD}\left((d_{CR})_j\right)\right]_{calculated}}{\sum_{i=1}^{m}\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_{calculated}}. \tag{9.52}$$

The calculational results $\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_{calculated}$ are listed in Tables 8.24 through 8.38 for the 30 MWd/kg U case and Tables 8.54 through 8.68 for the 50 MWd/kg U case.

Figures 9.19 and 9.20 demonstrate what has been predicted in Section 6.1: A significant change of the shape of the fission density distribution from the cosine-shaped distribution at $d_{CR} = 0$ to a distribution properly peaked in the top end region of the fuel zone requires a considerable CR insertion depth d_{CR}. In the 30 MWd/kg U case the first distribution that is really significantly peaked in the fuel zone's top end region is reached at $d_{CR} = 41.80$ cm (cf. Figure 9.19). Accordingly, at this insertion depth the first really significant increase $\delta k_{eff}(d_{CR}) = k_{eff}(d_{CR} > 0) - k_{eff}(d_{CR} = 0)$ of the neutron multiplication factor is observed for the 30 MWd/kg U uniform burn-up distribution (see Figure 8.2). In the 50 MWd/kg U case, the first distribution really significantly peaked in the fuel zone's top end region is already reached at a smaller d_{CR} value, viz. $d_{CR} = 26.12$ cm (see Figure 9.20), since, at given burn-up, the increase in the number densities of ^{235}U and ^{239}Pu due to CR insertion is the higher in comparison to the case of no CR insertion, the higher the burn-up (see Figure 6.2). This also explains the following observations:

- In the 50 MWd/kg U case, the first really significant increase of the neutron multiplication factor, $\delta k_{eff}(d_{CR}) = k_{eff}(d_{CR} > 0) - k_{eff}(d_{CR} = 0)$, is already observed for $d_{CR} = 26.12$ cm (see Figure 8.4).
- The fission density peaks in the fuel zone's top end region that are observed for CR insertion depths $31.35 \text{ cm} \le d_{CR} \le 73.15$ cm are significantly more pronounced in the 50 MWd/kg U case than in the 30 MWd/kg U case (compare Figure 9.20 with Figure 9.19). This is associated with the fact that the increase $\delta k_{eff}(d_{CR}) = k_{eff}(d_{CR} > 0) - k_{eff}(d_{CR} = 0)$ is significantly higher for $d_{CR} \ge 26.12$ cm in the 50 MWd/kg U case than in the 30 MWd/kg U case (see Figures 8.4 and 8.2).

As appears from Figures 9.19 and 9.20, for higher d_{CR} values the fission density peak is shifted more and more towards the centre of the fuel zone because the more reactive isotopic composition of the fuel is extended more and more towards the centre of the fuel zone. Finally, at full CR insertion ($d_{CR} = L$), the distribution returns to a cosine-shape, as is to be expected for a fission density distribution of any completely axially uniform isotopic fuel composition.

9.4.2 Fission density distributions for the axial burn-up profiles

9.4.2.1 Estimation of fission density model distributions

As appears from Figures 8.5 through 8.19 for the 30 MWd/kg U case and Figures 8.35 through 8.49 for the 50 MWd/kg U case, the fission density results $\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_\kappa$ delivered by the different contributors $\kappa = 1, 2, 3$ for the volumes of the axial zones $i = 1,..., m$ at the respective CR insertion depths $(d_{CR})_j$, $j = 1, 2,..., 15$, are not always compatible. Significant differences are particularly observed for the fission density results in the lower part of the fuel zone. This is hardly surprising since the probability for fission in this part of the fuel zone is expected to be very low because of the axial asymmetry in the fuel's isotopic composition due to the axial burn-up profile and CR insertion.

In order to be able to estimate fission density distributions $f\left(z \middle| (d_{CR})_j\right)$ from the results $\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_\kappa$, $\kappa = 1, 2, 3$, according to Equations (2.32) and (2.33), these results have to be combined to estimates $\rho_i^{FD}\left((d_{CR})_j\right)$ for each zone i at given j. This is done by calculating the weighted mean:

$$\rho_i^{FD}\left((d_{CR})_j\right) = \sum_{\kappa=1}^{3} w_{j\kappa} \cdot \left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_\kappa \tag{9.53}$$

The weights $w_{j\kappa}$ are given by the number of neutron histories $N_{j\kappa}$ evaluated by the respective contributors κ:

$$w_{j\kappa} = \frac{N_{j\kappa}}{\sum_{\tilde{\kappa}=1}^{3} N_{j\tilde{\kappa}}} \tag{9.54}$$

with

$$N_{j\kappa} = \sum_{r=1}^{R_{j\kappa}} \left[(n_b)_{j\kappa r} - (n_s)_{j\kappa r} \right] \cdot \nu_{j\kappa r} \, , \tag{9.55}$$

$R_{j\kappa}$:= number of calculation runs per case j;

$(n_b)_{j\kappa r}$:= number of neutron batches (generations) totally followed up;

$(n_s)_{j\kappa r}$:= number of initial batches (generations) skipped;

$\nu_{j\kappa r}$:= number of neutrons per batch (generation).

The standard deviations of the mean values (9.53) are estimated by means of Equation (9.56):

$$s\left(\rho_i^{FD}\left((d_{CR})_j\right)\right) = \frac{1}{\sqrt{\sum_{\tilde{\kappa}=1}^{3} R_{j\tilde{\kappa}}}} \cdot \sqrt{\sum_{\tilde{\kappa}=1}^{3} w_{j\tilde{\kappa}} \cdot \left(\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_{\tilde{\kappa}} - \rho_i^{FD}\left((d_{CR})_j\right) \right)^2} \, . \tag{9.56}$$

The fission density results $\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_\kappa$ are listed in Tables 8.9 through 8.23 for the 30 MWd/kg U case and Tables 8.39 through 8.53 for the 50 MWd/kg U case. The numbers $N_{j\kappa}$ of evaluated neutron histories and the resultant weights $w_{j\kappa}$ are given in Tables 9.14 and 9.15.

As appears from Tables 9.14 and 9.15, the weights resulting for IRSN reflect the fact that IRSN has made only one calculation run per case (see Section 8.2 and Tables 8.9 through 8.68). Table 9.15 shows that in the 50 MWd/kg U case the mean values (9.53) for the CR insertion depths $0 < d_{CR} < L = 365.76$ cm are absolutely dominated by the respective AREVA NP results. Therefore, instead of using Equations (9.53) and (9.56), the following way is taken for all the CR insertion depths $0 < d_{CR} < L$ in the 50 MWd/kg U case[15]:

- For $\rho_i^{FD}\left((d_{CR})_j\right)$ the AREVA NP result is chosen:

$$\rho_i^{FD}\left((d_{CR})_j\right) = \left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_{AREVA} \text{ for } \hat{B}_{ABP} = 50 \text{ MWd/kg U and } d_{CR} \neq 0 \vee d_{CR} \neq L \, . \tag{9.57}$$

- The standard deviation assigned to the value (9.57) considers:
  - the standard deviations of the Tractebel and AREVA NP results listed in Tables 8.39 through 8.53 and
  - the fact that the results from Tractebel and IRSN differ from the respective AREVA NP results:

  Therefore, using the abbreviations:

$$\kappa = \begin{cases} 1: \text{Tractebel} \\ 2: \text{IRSN} \\ 3: \text{AREVA NP} \end{cases} \, , \tag{9.58}$$

15) The cases $d_{CR} = 0$ and $d_{CR} = L$ are treated according to Equations (9.53) and (9.56) (see Table 9.15).

the standard deviation assigned to the value (9.57) is defined by expression (9.59)[16],

$$s\left(\rho_i^{FD}\left((d_{CR})_j\right)\right)=\sqrt{\sum_{\tilde{\kappa}=1}^{3}(1-\delta_{\tilde{\kappa}2})\cdot w_{j\tilde{\kappa}}^2\cdot s_{ij\tilde{\kappa}}^2+\sum_{\tilde{\kappa}=1}^{3}(1-\delta_{\tilde{\kappa}3})\cdot w_{j\tilde{\kappa}}^2\cdot\left(\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_{\tilde{\kappa}}-\rho_i^{FD}\left((d_{CR})_j\right)\right)^2}$$

$$\text{for } \hat{B}_{ABP}=50\ \text{MWd/kg U and } d_{CR}\neq 0 \vee d_{CR}\neq L, \tag{9.59}$$

$s_{ij\kappa}$, $\kappa=1$ (Tractebel) and $\kappa=3$ (AREVA NP): standard deviations listed in Tables 8.39 through 8.53.

$\delta_{\kappa\mu}$ in expression (9.59) ($\mu=2$ or $\mu=3$) denotes the Kronecker symbol:

$$\delta_{\kappa\mu}=\begin{cases}1 \text{ for } \kappa=\mu\\ 0 \text{ for } \kappa\neq\mu\end{cases}.$$

- As appears from Tables 8.39 through 8.53, for a lot of CR insertion depths d_{CR} Tractebel did not recorded any fission events in axial zones in the bottom region of the fuel zone. For such cases Equation (9.59) reduces to

$$s\left(\rho_i^{FD}\left((d_{CR})_j\right)\right)=\sqrt{\tilde{w}_{j3}^2\cdot s_{ij3}^2+\tilde{w}_{j2}^2\cdot\left(\left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_2-\rho_i^{FD}\left((d_{CR})_j\right)\right)^2} \tag{9.60}$$

$$\text{for } \hat{B}_{ABP}=50\ \text{MWd/kg U, } d_{CR}\neq 0 \vee d_{CR}\neq L \text{ and } \left[\rho_i^{FD}\left((d_{CR})_j\right)\right]_1=0,$$

$\tilde{w}_{j\kappa}$ $\kappa=2$ (IRSN) and $\kappa=3$ (AREVA NP): weights without the neutron histories from Tractebel, (see Table 9.15).

The resulting values (9.53) with the corresponding standard deviations (9.56) or, as the case may be, the values (9.57) with the assigned standard deviations (9.59) or (9.60) are listed in Tables 9.16 through 9.30 and are used to estimate the axial fission density distributions $f\left(z\middle|(d_{CR})_j\right)$ according to the procedure described at the end of Section 2.2.6.

The obtained distributions $f\left(z\middle|(d_{CR})_j\right)$ are depicted in Figures 9.21 through 9.35 for the 30 MWd/kg U axial burn-up profile and in Figures 9.36 through 9.50 for the 50 MWd/kg U axial burn-up profile. The curves shown in all these figures have still to be normalised according to equations (2.25) and (2.26). This has been done in Figures 9.51 through 9.54.

As appears from these figures, with onset of CR insertion the fission density peak in the top end region of the fuel zone increases in height and becomes slimmer with increasing insertion depth d_{CR} since the more reactive isotopic composition of the fuel is more and more introduced in the fuel zone's top end region (see Figures 9.51 and 9.53). Then, in the range where d_{CR} exceeds the value d_m at which the end effect Δk reaches its maximum (see Figures 9.13 and 9.16), the fission density peak decreases more and more in height and becomes broader with increasing d_{CR} since the more reactive isotopic composition of the fuel is extended more and more towards the bottom of the fuel zone (see Figures 9.52 and 9.54).

[16] This expression can be justified by applying the definition of the variance [15] to the expression (9.53) and by introducing then the square of the difference between the Tractebel result ($\kappa = 1$) and the AREVA NP result chosen in (9.57) in order to cover the fact that (9.57) slightly differs from (9.53).

The width of the fission density peak at given CR insertion depth $d_{CR} \in [0, L]$ is always smaller for the 50 MWd/kg U axial burn-up profile than for the 30 MWd/kg U profile since the top-node-specific burn-up increments:

$$\Delta B_\nu = B_\nu\left(\hat{B}_{ABP} = 50 \text{ MWd/kg U}\right) - B_\nu\left(\hat{B}_{ABP} = 30 \text{ MWd/kg U}\right),\ \nu = 29, 30, ..., 35, \qquad (9.61)$$

caused by an increase of the average burn-up from 30 MWd/kg U to 50 MWd/kg U, increase with decreasing node number $\nu = 35,...,29$ (see Figure 2.1), so that the fission density peak is shifted towards the top end of the fuel zone and becomes higher and slimmer, therefore. It is therefore to be expected that, at given CR insertion depth d_{CR}, the top end content (2.27), $\kappa = 7$ (see Section 2.2.6), is always greater for the 50 MWd/kg U profile than for the 30 MWd/kg U profile.

9.4.2.2 Observations on the top end fission probability content

Figure 9.55, depicting the calculated top end fission probability contents C7 (see Equations (2.27) and (2.28) with $\kappa = 7$) as a function of the CR insertion depth d_{CR}, confirms the behaviour of the fission density distributions just discussed before: C7 increases first with increasing d_{CR}, reaches then a maximum in the range of d_{CR} values where the end effect Δk reaches its maximum value (see Figure 9.16), and decreases then with further increasing d_{CR}. However, it should be noted that the C7 peaks are broader than the Δk peaks, in particular in the 50 MWd/kg U case, and that the C7 maxima are positioned at d_{CR} values slightly higher than the values d_m at which the Δk maxima are positioned (see Figures 9.14 and 9.15). The behaviour of the top end content C7 as a function of d_{CR} can be related to the increase of the neutron multiplication factors $k_{eff}(ABP)$ of the axial burn-up profiles: As appears from Figures 9.56 and 9.57, $k_{eff}(ABP)$ stops increasing when $C7(d_{CR} > 0)$ falls below its value at $d_{CR} = 0$. The increase in $k_{eff}(ABP)$ from its value at $d_{CR} = 0$ to its value at $d_{CR} \geq 94.05$ cm is of course greater for the 50 MWd/kg U axial profile than for the 30 MWd/kg U profile. One has to keep in mind that the increments of the number densities of ^{235}U and ^{239}Pu compared to the case of $d_{CR} = 0$ are higher, the higher the burn-up is, (see Figure 6.2).

Predictions of the top end content C7 for the case of no control rod insertion ($d_{CR} = 0$) have been made in Section 6.2:

- For the 30 MWd/kg U axial burn-up profile two C7 values have been predicted, $C7 \approx 0.775$ from Figure 6.8 and $C7 \approx 0.764$ from Figure 6.10, see Equation 6.6). Both values are close to the calculated C7 content of 0.769, (see Table 9.32).
- For the 50 MWd/kg U axial burn-up profile, a value of $C7 \approx 0.916$ has been derived from Figure 6.10, (see Equation (6.7)). This value is also fairly close to the calculated C7 content of 0.926, (see Table 9.32).

As mentioned in Section 6.2, the Phase II-C regression functions $C6 = C6(S6)$ shown in Figure 6.8 do not consider the impact of the local asymmetry demonstrated in Figure 6.7. This impact is taken into account in Figures 9.58 and 9.59 which results in the 50 MWd/kg U case in particular in a significant increase of the sample correlation coefficient R^2 of the regression function (compare Figure 9.59 with Figure 6.8). As indicated in Figures 9.58 and 9.59, taking the local asymmetry into account one obtains predicted top end content values of 0.779 for the 30 MWd/kg U case and 0.918 for the 50 MWd/kg U case. These predicted values are again close to the C7 values calculated for $d_{CR} = 0$. These good agreements between predictions and outcomes demonstrate, keeping in mind all the preconditions described in Section 6.2 [4], the power of the relations established in Appendix VI [4], for the correlations between top end content, end effect and asymmetry parameters of the Phase II-C axial burn-up profiles.

The Phase II-C correlations between end effect and top end content used in Section 6.2 for predicting the C7 top end contents for the Phase II-E profiles at $d_{CR} = 0$ were shown in Figure 6.10. In Figure 9.60 a joint regression function $\Delta k = \Delta k(C6)$ is shown for all the Phase II-C results, i.e. a regression function which is based on all the 32 MWd/kg U results and all the 50 MWd/kg U results. It is interesting to note that this joint regression function yields, as indicated in Figure 9.60, also predictions of the C7 contents for the case of full CR insertion ($d_{CR} = L = 365.76\ \text{cm}$) which are very close to the calculated C7 values (compare Figure 9.60 with Table 9.32). However, one should be careful of these predictions for $d_{CR} = 365.76\ \text{cm}$. In fact, the separate regression functions for the 32 MWd/kg U Phase II-C profiles and the 50 MWd/kg U Phase II-C profiles do not really fit together, as indicated in Figure 9.60. The sample correlation coefficient R^2 of the joint regression function is remarkably high (see Figure 9.60) due to the results observed for the 32 MWd/kg U Phase II-C results. It cannot be decided here whether these results can be taken as a basis for making predictions of $\Delta k = \Delta k(C7)$ for 50 MWd/kg U profiles at full CR insertion or not. In contrast to the predictions made for the case of no CR insertion ($d_{CR} = 0$), the predictions made for the case of full CR insertion ($d_{CR} = 365.76\ \text{cm}$) need further investigations which are beyond the scope of the report on hand.

10 Observations and conclusions

All the predictions of Phase II-E results which have been made in Section 6 on the basis of observations made in the Phase II-C and Phase II-D benchmarks [4] [1], the prediction of the qualitative behaviour of the neutron multiplication factor and the end effect as a function of the CR insertion depth (see Section 6.1) as well as the predictions of the numeric values of the end effects Δk and the top end contents $C7$ for the case of no CR insertion ($d_{CR} = 0$) have been verified.

The verification of the predicted $\Delta k(d_{CR} = 0)$ values (6.2) and (6.5) as well as of the predicted $C7(d_{CR} = 0)$ values (6.6) and (6.7) demonstrates that the relations established in Appendix VI [4], for the correlations between end effect, top end content and asymmetry parameters of axial burn-up profiles can be directly applied to conceptually identically designed spent PWR fuel configurations, provided that the preconditions described in Section 6.2 [4] are met. These preconditions do not include the requirement that the geometrical design of the PWR spent fuel assemblies to which these relations are applied is identical with the geometrical design of the fuel assemblies used in the Phase II-C benchmark exercises. An 18×18-24 fuel assembly design with a fuel rod pitch of 1.27 cm and an active length of 390 cm were used in the Phase II-C benchmark exercises [4] whereas the fuel assembly employed in the Phase II-E benchmark is a 17×17-25 design with a fuel rod pitch of 1.26 cm and an active length of 365.76 cm. However, it is well-known that, at given average burn-up, different active lengths usually result in different axial burn-up shapes. Different axial burn-up shapes usually have different asymmetry parameter values. It is therefore unsurprising that these different shapes may lead to different end effects and top end contents. However, because of the above-described observations it can be concluded that the relative difference $(L_{II-C} - L_{II-E})/L_{II-C}$ between the Phase II-C active length L_{II-C} and the Phase II-E active length L_{II-E} is too small (it amounts to 0.062) to rule out the application of the Phase II-C relations, established in Appendix VI [4], to the cases $d_{CR} = 0$ of the Phase II-E exercises. It is beyond the scope of the Phase II-E benchmark to estimate a limiting value $| L_{II-C} - L |/L_{II-C}$, if there is one, up to which the Phase II-C relations can be applied, provided, of course, that all the other preconditions are met.

In addition to the verification of the applicability of the Phase II-C relations to the Phase II-E $d_{CR} = 0$ cases, the following observations have been made: As found in the evaluation of the Phase II-C results [4] it turned out in the evaluation of the Phase II-E results that the ratio of the average burn-up values of the selected axial burn-up profiles,

$$f = \frac{50\ \text{MWd/kg U}}{30\ \text{MWd/kg U}}, \tag{10.1}$$

and a scaling parameter of:

$$\delta = 0.02 \tag{10.2}$$

play significant roles in comparisons of model functions derived from the Phase II-E results to describe the impact of CR insertion on the end effect. For the parameters of the Planck shape (9.13)

$$P_S\left(d_{CR} \middle| \hat{B}_{ABP}\right) = \frac{\beta \cdot d_{CR}^{\gamma}}{\exp\left(\lambda(\hat{B}_{ABP}) \cdot d_{CR}\right) - \xi(\hat{B}_{ABP})} \tag{10.3}$$

of the model (9.12) the following results have been obtained (see Table 9.13):

Parameter	$\hat{B}_{ABP} = 30\,\mathrm{MWd/kg\,U}$	$\hat{B}_{ABP} = 50\,\mathrm{MWd/kg\,U}$	**Observation**
β	$2.9488 \cdot 10^{-6}$	$2.2021 \cdot 10^{-5}$	$\frac{\beta(50\,\mathrm{MWd/kg\,U})}{\beta(30\,\mathrm{MWd/kg\,U})} \approx f^{\gamma+1}$
γ	3	3	
λ	$6.2117 \cdot 10^{-2}$	$1.0507 \cdot 10^{-1}$	$\frac{\lambda(50\,\mathrm{MWd/kg\,U})}{\lambda(30\,\mathrm{MWd/kg\,U})} \approx f$
ξ	$1.77 \cdot 10^{-1}$	$1.8432 \cdot 10^{-1}$	$\xi(50\,\mathrm{MWd/kg\,U}) \approx \xi(30\,\mathrm{MWd/kg\,U})$

For the parabola (9.15)

$$p(d_{CR}) = \sum_{i=0}^{2} a_i d_{CR}^i \,. \tag{10.4}$$

of the model (9.12) the following observations have been made:

- There is a CR insertion depth d_B (see Figure 9.13) defined by the intersection of the curve representing the parabola (10.4) with the curve given by the exponential model (9.16). The following values have been observed for d_B:

d_{CR}	$\hat{B}_{ABP} = 30\,\mathrm{MWd/kg\,U}$	$\hat{B}_{ABP} = 50\,\mathrm{MWd/kg\,U}$	**Observation**
d_B	365.76 cm = L[17)]	219.54 cm	$\frac{d_B(30\,\mathrm{MWd/kg\,U})}{d_B(50\,\mathrm{MWd/kg\,U})} \approx f$

For these d_B values the respective contributions of the Planck shape (10.3) to the complete model function (9.12) are negligible.

- At $d_{CR} = 0$ the contribution of the Planck shape (10.3) to the complete model function (9.12) is zero, by definition. The end effect $\Delta k(d_{CR} = 0)$ is therefore described by the coefficient a_0 of the parabola:

$$a_0\left(\hat{B}_{ABP}\right) = \Delta k\left(d_{CR} = 0; \hat{B}_{ABP}\right) \tag{10.5}$$

To check the applicability of the Phase II-C relations (9.28) and (9.29) (see Section 9.2.3) to the end effect at $d_{CR} = 0$ and hence to the coefficient a_0 a correction of:

$$\Delta a_0^{corr}\left(\hat{B}_{ABP} = 30\,\mathrm{MWd/kg\,U}\right) = 2.5535 \cdot 10^{-3} \tag{10.6}$$

[17)] The exponential model (9.16) is not required for the 30 MWd/kg U case. There is no need, therefore, to change the definition of the parameter η of this model.

has to be applied to $a_0\left(\hat{B}_{ABP}\right)$ [see Equation (9.35)] in order to take into account the fact that the two Phase II-E axial burn-up profiles have slightly different asymmetry parameters:

$$a_0^{corr}(30\ \text{MWd/kg U}) = a_0(30\ \text{MWd/kg U}) + \Delta a_0^{corr}(30\ \text{MWd/kg U}) \tag{10.7}$$

The following observations have been made, see Equations (9.36) through (9.39):

Coefficient	**Observation**
$a_0^{corr}(30) \equiv a_0^{corr}(30\ \text{MWd/kg U}) = 1.21241 \cdot 10^{-2}$	$a_0^{corr}(30) \approx (a_0(50) - \delta) \cdot f^{-1}$
$a_0(50) \equiv a_0(50\ \text{MWd/kg U}) = 4.00508 \cdot 10^{-2}$	$a_0(50) \approx a_0^{corr}(30) \cdot f + \delta$

For the description of the end effect as a function of the CR insertion depth d_{CR} for $0 < d_{CR} < d_B$ the following observations have been made:

- For the loci d_m of the maxima of the complete model functions (9.12) the following results have been obtained:

d_{CR}	$\hat{B}_{ABP} = 30\ \text{MWd/kg U}$	$\hat{B}_{ABP} = 50\ \text{MWd/kg U}$	**Observation**
d_m / cm	46.059 ± 4 [18)]	26.12	$\frac{d_m(50\ \text{MWd/kg U})}{d_m(30\ \text{MWd/kg U})} = 0.568 \pm 0.049$ Compatible with $f^{-1} = 0.6$

- Even though it cannot be expected that the Phase II-C relations (9.28) and (9.29) are applicable for CR insertion depths $d_{CR} > 0$ it has been found that these relations remain approximately applicable to the maximum values
  - $\kappa(30)_m \equiv \Delta k(d_m = 46.059\ \text{cm}; \hat{B} = 30\ \text{MWd/kg U})$ and
  - $\kappa(50)_m \equiv \Delta k(d_m = 26.12\ \text{cm}; \hat{B} = 50\ \text{MWd/kg U})$.

  of the end effects. In addition, this goes also for the contributions
  - $p(30)_m \equiv p(d_m = 46.059\ \text{cm}; \hat{B} = 30\ \text{MWd/kg U})$ and
  - $p(50)_m \equiv p(d_m = 26.12\ \text{cm}; \hat{B} = 50\ \text{MWd/kg U})$.

  of the parabola to the maximum end effects, see Equation (9.45):

18) For the estimation of the uncertainty of the d_m value (see discussion before Equation (9.44)).

d_{CR}	$\hat{B}_{ABP} = 30\ \mathrm{MWd/kg\ U}$	$\hat{B}_{ABP} = 50\ \mathrm{MWd/kg\ U}$	**Observation**
d_m	$\kappa(30)_m = 2.43250 \cdot 10^{-2}$ $p(30)_m = 7.672805 \cdot 10^{-3}$	$\kappa(50)_m = 5.95984 \cdot 10^{-2}$ $p(50)_m = 3.406907 \cdot 10^{-2}$	$\kappa(50)_m - f \cdot \kappa(30)_m = 0.0191 \pm 0.0028$ Compatible with $\delta = 0.02$ $p(50)_m - f \cdot p(30)_m = 0.02128$ Compatible with $\delta = 0.02$ [19]

In conclusion, as seen in both benchmarks, the Phase II-C benchmark and the Phase II-E benchmark, the ratio:

$$f_{ij} = \frac{\left(\hat{B}_{ABP}\right)_i}{\left(\hat{B}_{ABP}\right)_j}, \ \left(\hat{B}_{ABP}\right)_i > \left(\hat{B}_{ABP}\right)_j, \tag{10.8}$$

of the average burn-up values of two axial burn-up profiles and a scaling parameter:

$$\delta_{ij} = \delta\left(\left(\hat{B}_{ABP}\right)_i, \left(\hat{B}_{ABP}\right)_j\right) \tag{10.9}$$

play important roles in comparisons of model functions $\Delta k\left(x \middle| \left(\hat{B}_{ABP}\right)_i\right)$ and $\Delta k\left(x \middle| \left(\hat{B}_{ABP}\right)_j\right)$ describing, for a given spent nuclear fuel configuration, the end effect Δk as a function of a parameter x such as the asymmetry of the axial burn-up profiles [4] or the CR insertion depth d_{CR} during depletion. As indicated in Equation (10.9), it is self-evident that the scaling parameter is dependent on the axial burn-up profiles' burn-up values. As a suggestion, it makes sense to repeat some Phase II-C cases and some Phase II-E cases with an average burn-up value $\hat{B}_{ABP}$ different from those values used in Phase II-C and Phase II-E in order to become sensitive to the dependence of the scaling parameter (10.9) on the average burn-up values and, in addition, to support the observed Phase II-C and Phase II-E relations with more statistics.

The conditions under which the Phase II-C relations were obtained are specified in Section 1.3.5 [4]. As follows from Section 4 of the report on hand, all these conditions are met in the Phase II-E benchmark exercises. The importance of these conditions and impacts of possible changes of these conditions have already been discussed in detail in Section 7.3 [4]. One important case there discussed in this context is the case that a section of the top end of the fuel zone of the fuel assemblies juts out of the neutron absorber channels of a spent fuel storage or transport system[20]. This case has been computationally analysed in [18] using the Phase II-E 30 MWd/kg U axial burn-up profile together

[19] taking into account the uncertainty of ± 4 cm estimated for d_m of the 30 MWd/kg U case.

[20] Other important cases such as the initial presence of burnable absorbers (Gd, Er, B) in the fuel, the use of burnable poison rods or axial shaping rods during depletion, as well as the presence of axial blankets have already been discussed in detail in [4].

with the isotopic number densities for the case of no CR insertion $d_{CR} = 0$. The obtained results, depicted in Figure 10.1 of the report on hand, verify all the predictions made for this case in Section 7.3 [4]. These predictions were based on the reflections on the qualitative behaviour of the end effect as a function of the CR insertion. These reflections were verified by the Phase II-E benchmark results as shown in [18] and described in detail in the report on hand.

Figure 10.1 presents the neutron multiplication factor of the axial burn-up profile, the neutron multiplication factor of the related uniform burn-up distribution and the resulting end effect as a function of the "non-coverage" parameter ζ giving the section of the fuel's active zone jutting out of the neutron absorber channels. $\zeta = 0$ defines the case that the top end of the fuel zone and the top end of the absorber channels are lying in one and the same plane perpendicular to the axial direction of the fuel assemblies. So, $\zeta < 0$ means that the top end of the fuel zone is at a lower axial height than the top end of the absorber channels, (see Figure 10.2) (in this figure the z-axis defines the axial direction of the fuel assemblies and absorber channels). It is worthwhile to note that the neutron multiplication factor $k_{eff}(\zeta \,|\, \hat{B}_{ABP} = 30\ \mathrm{MWd/kg\ U})$ and hence the end effect $\Delta k(\zeta)$ of the axial burn-up profile already respond at negative ζ values to an increase of ζ. Then, for $\zeta > 0$, the neutron multiplication factor $k_{eff}(\zeta)$ of the profile and hence the end effect $\Delta k(\zeta)$ increase promptly and rapidly demonstrating that the case that the fuel zone of spent PWR fuel assemblies is fully shielded by neutron absorbing channels, will never be analysed by using uniform burn-up distributions.

With these reflections on the case of not-fully shielded fuel zones the report on hand is complete. The lessons learnt from elaborating the results from the Phase II-C, Phase II-D, and Phase II-E benchmark exercises as well as from the case of partial non-coverage of the fuel zone (see Figure 10.1) show:

- that the end effect is inherent to irradiated PWR UO_2 fuel assemblies and
- that the end effect strongly depends on:
  - the depletion conditions including, in particular, the cycle-specific CR insertion histories [21)],
  - the asymmetry and local asymmetry of an axial burn-up profile (both, the asymmetry and the local asymmetry are impacted by the depletion conditions and change tendencially with the average burn-up of the profile, [4], [5] and [10]),
  - the average bun-up of the axial burn-up profile (at given asymmetry and local asymmetry of the profile), and
  - the spent fuel configuration to be analysed[22)].

[21)] Note that relatively small CR insertion depths may have to be considered in burn-up credit applications. It is common practice in core operation that at least one CR bank is in a "target bite position", i.e. at beginning of cycle the control rods of this bank are inserted into the fuel zone of the involved fuel assemblies with an insertion depth of usually not more than about 30 cm (which is just the range of the maximum end effect), and the insertion depth is then gradually reduced during the cycle [10], for example.

[22)] The end effects $\Delta k(\zeta = 0)$ and $\Delta k(\zeta = L = 365.76\ \mathrm{cm})$ shown in Figure 10.1 are slightly but statistically significantly different. This shows that the end effect is inherent to spent fuel but is impacted by the neutron spectrum associated with the presence ($\zeta = 0$) or non-presence ($\zeta = L$) of the neutron absorber plates between the fuel assemblies.

In burn-up credit application cases, it is necessary to look for a bounding irradiation history given by those core operation conditions leading, at given initial enrichment and given burn-up, to the highest reactivity of the spent nuclear fuel under the condition of the spent nuclear fuel configuration of interest. The depletion parameters for the depletion analysis have to be bounding with respect to the spent fuel's reactivity under the condition of the spent fuel configuration. As follows from the evaluation of the Phase II-C and Phase II-E results, since the neutron multiplication factor of a spent nuclear fuel configuration, which is assumed for bounding the limiting normal or accidental conditions of the spent fuel management system of interest, is virtually solely determined by the top end region of the active zone of the fuel assemblies[23)], the depletion parameters to be chosen for the depletion analysis have to cover the depletion conditions in the top end region of the core of interest. This pertains to the depletion parameters or conditions:

- fuel temperature;
- moderator temperature and related density;
- use of fixed neutron absorbers, control rod insertion histories in particular;
- integral burnable absorbers initially present in the fuel;
- presence of MOX fuel in the core.

The results of the Phase II-C through Phase II-E benchmarks give a sound and robust basis for defining bounding irradiation histories (compare [10], for example).

In addition to the necessity of looking for a bounding irradiation history, it is necessary in burn-up credit application cases to look for bounding axial burn-up profiles. As follows from the Phase II-C results, the bounding profile is the profile with the highest asymmetry provided that the end effect obtained with this profile is non-negative[24)]. Since this holds true irrespective of what the bounding depletion conditions are, the results of the Phase II-C benchmark give a sound and robust basis for defining a bounding axial burn-up profile as a function of the average burn-up under the bounding depletion conditions [5], for example).

23) Apart from the case that the bottom end of the fuel zone protrudes from the neutron absorbing channels or, in more general terms, apart from the case that the moderation, neutron absorption or neutron reflection conditions at the bottom end region of the fuel zone differ so much from the moderation, neutron absorption or neutron reflection conditions at the top end region of the fuel zone that the bottom end region becomes significantly more reactive than the top end region (see discussion in Section 7.3 [4] for such cases). However, if such cases are related to accidental conditions (and usually they are) then one should consider that it might be possible that the - under normal conditions more reactive - top end region is also impacted by the accidental conditions so that the reactivity importance of this region is further increased.

24) Otherwise the uniform burn-up distribution is the bounding one, by definition, see Equation (2.3). Remember that is has been shown in the report on hand that the end effect, which is positive in case of no CR insertion during irradiation can become negative for deeply inserted control rods. Therefore, it should be checked under the bounding irradiation history that the end effect is non-negative.

Tables

Table 2.1: Normalised axial burn-up distributions as defined by Equation (2.5)

Node N°.	α_{Node}	
	$\hat{B}_{ABP} = 30\ \mathrm{MWd/kg\ U}$	$\hat{B}_{ABP} = 50\ \mathrm{MWd/kg\ U}$
1.000000000	0.255439200	0.275369900
2.000000000	0.667065340	0.689837740
3.000000000	0.862861930	0.878085650
4.000000000	1.062206400	1.047756000
5.000000000	1.120791300	1.101554400
6.000000000	1.152351900	1.128186200
7.000000000	1.162073500	1.137110700
8.000000000	1.166242200	1.141825000
9.000000000	1.164447500	1.141207700
10.000000000	1.158473200	1.137065200
11.000000000	1.153568400	1.133595900
12.000000000	1.146764000	1.128677800
13.000000000	1.138651000	1.122789400
14.000000000	1.132278500	1.118171100
15.000000000	1.124674700	1.112621900
16.000000000	1.116717300	1.106788700
17.000000000	1.110366900	1.102155700
18.000000000	1.102669100	1.096529900
19.000000000	1.095083000	1.090990500
20.000000000	1.088816100	1.086442600
21.000000000	1.080964400	1.080710200
22.000000000	1.078894800	1.080040300
23.000000000	1.077667900	1.079971000
24.000000000	1.074367600	1.078313800
25.000000000	1.071240400	1.076742300
26.000000000	1.067553800	1.074568400
27.000000000	1.060311700	1.069516500
28.000000000	1.050562800	1.061984600
29.000000000	1.035118000	1.048742800
30.000000000	1.004185700	1.021187500
31.000000000	0.955665170	0.976102620
32.000000000	0.885401210	0.907751420
33.000000000	0.773046230	0.804346360
34.000000000	0.578747860	0.612703380
35.000000000	0.224731120	0.250556810

Table 2.2: Phase II-E axial burn-up model distributions

FA-Name: 1001_MEAN---030
lfd.Nr.: 1 average discharge burn-up: 3.00000E+01 MWd/kg U

Model distribution: 19 axial zones (delta B = 0.0E+00)

Zone No.	Node-Start	Node-End	upper bound / cm	average burnup / MWd/kg
1	1	1	10.45	7.66318E+00
2	2	2	20.90	2.00120E+01
3	3	3	31.35	2.58859E+01
4	4	4	41.80	3.18662E+01
5	5	5	52.25	3.36237E+01
6	6	6	62.70	3.45706E+01
7	7	10	104.50	3.48843E+01
8	11	14	146.30	3.42845E+01
9	15	18	188.11	3.34082E+01
10	19	20	209.01	3.27585E+01
11	21	26	271.71	3.22534E+01
12	27	28	292.61	3.16631E+01
13	29	29	303.06	3.10535E+01
14	30	30	313.51	3.01256E+01
15	31	31	323.96	2.86700E+01
16	32	32	334.41	2.65620E+01
17	33	33	344.86	2.31914E+01
18	34	34	355.31	1.73624E+01
19	35	35	365.76	6.74193E+00

==

FA-Name: 1002_MEAN---050
lfd.Nr.: 2 average discharge burn-up: 5.00000E+01 MWd/kg U

Model distribution: 19 axial zones (delta B = 0.0E+00)

Zone No.	Node-Start	Node-End	upper bound / cm	average burnup / MWd/kg
1	1	1	10.45	1.37685E+01
2	2	2	20.90	3.44919E+01
3	3	3	31.35	4.39043E+01
4	4	4	41.80	5.23878E+01
5	5	5	52.25	5.50777E+01
6	6	6	62.70	5.64093E+01
7	7	10	104.50	5.69651E+01
8	11	14	146.30	5.62904E+01
9	15	18	188.11	5.52262E+01
10	19	20	209.01	5.44358E+01
11	21	26	271.71	5.39196E+01
12	27	28	292.61	5.32875E+01
13	29	29	303.06	5.24371E+01
14	30	30	313.51	5.10594E+01
15	31	31	323.96	4.88051E+01
16	32	32	334.41	4.53876E+01
17	33	33	344.86	4.02173E+01
18	34	34	355.31	3.06352E+01
19	35	35	365.76	1.25278E+01

==

Ende

Uebersicht, geordnet nach average discharge burn-up (ADB):

ADB= 30.00000 lfd.Nr.: 1 FA-Name: 1001_MEAN---030
ADB= 50.00000 lfd.Nr.: 2 FA-Name: 1002_MEAN---050

Table 4.1: Atomic number density (in $b^{-1}cm^{-1}$) of structural materials and water

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

Table 4.2: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 0 cm

Axial zone No	Height of the upper bound of the zone/ cm
1	10.45
2	20.90
3	31.35
4	41.80
5	52.25
6	62.70
7	104.50
8	146.30
9	188.11
10	209.01
11	271.71
12	292.61
13	303.06
14	313.51
15	323.96
16	334.41
17	344.86
18	355.31
19	365.76

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed13_f01_id00000_b30.mip
- average burn-up = 50 MWd/kg U: ed13_f01_id00000_b50.mip

Table 4.3: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 5.22 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	334.41	
17	344.86	
18	355.31	
19	360.54	
20	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id00522_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id00522_b50.mip

Table 4.4: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 10.45 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	334.41	
17	344.86	
18	355.31	
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id01045_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id01045_b50.mip

Table 4.5: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 15.67 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	334.41	
17	344.86	
18	350.09	
19	355.31	CR
20	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id01567_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id01567_b50.mip

Table 4.6: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 20.90 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	334.41	
17	344.86	
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id02090_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id02090_b50.mip

Table 4.7: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 26.12 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	334.41	
17	339.64	
18	344.86	CR
19	355.31	CR
20	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id02612_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id02612_b50.mip

Table 4.8: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 31.35 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	334.41	
17	344.86	CR
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id03135_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id03135_b50.mip

Table 4.9: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 36.57 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	329.19	
17	334.41	CR
18	344.86	CR
19	355.31	CR
20	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id03657_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id03657_b50.mip

Table 4.10: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 41.80 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	
16	334.41	CR
17	344.86	CR
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id04180_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id04180_b50.mip

Table 4.11: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 52.25 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	
15	323.96	CR
16	334.41	CR
17	344.86	CR
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id05225_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id05225_b50.mip

Table 4.12: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 62.70 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	
14	313.51	CR
15	323.96	CR
16	334.41	CR
17	344.86	CR
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id06270_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id06270_b50.mip

Table 4.13: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 73.15 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	
13	303.06	CR
14	313.51	CR
15	323.96	CR
16	334.41	CR
17	344.86	CR
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id07315_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id07315_b50.mip

Table 4.14: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 94.05 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	
2	20.90	
3	31.35	
4	41.80	
5	52.25	
6	62.70	
7	104.50	
8	146.30	
9	188.11	
10	209.01	
11	271.71	
12	292.61	CR
13	303.06	CR
14	313.51	CR
15	323.96	CR
16	334.41	CR
17	344.86	CR
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id09405_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id09405_b50.mip

Table 4.15: Axial zoning of the Phase II-E axial burn-up model distributions for a CR insertion depth of 365.76 cm

Axial zone No	Height of the upper bound of the zone/ cm	
1	10.45	CR
2	20.90	CR
3	31.35	CR
4	41.80	CR
5	52.25	CR
6	62.70	CR
7	104.50	CR
8	146.30	CR
9	188.11	CR
10	209.01	CR
11	271.71	CR
12	292.61	CR
13	303.06	CR
14	313.51	CR
15	323.96	CR
16	334.41	CR
17	344.86	CR
18	355.31	CR
19	365.76	CR

Axial burn-up model distribution isotopic number densities:

- average burn-up = 30 MWd/kg U: ed24_f01_id36576_b30.mip
- average burn-up = 50 MWd/kg U: ed24_f01_id36576_b50.mip

Table 5.1: Summary of CR insertion depths to be considered

CR insertion depth / cm	Axial zoning	Remark
0.0	Table 4.2	
5.22	Table 4.3	**optional**
10.45	Table 4.4	
15.67	Table 4.5	**optional**
20.90	Table 4.6	
26.12	Table 4.7	**optional**
31.35	Table 4.8	
36.57	Table 4.9	**optional**
41.80	Table 4.10	
52.25	Table 4.11	
62.70	Table 4.12	**optional**
73.15	Table 4.13	
94.05	Table 4.14	**optional**
365.76	Table 4.15	

Table 7.1: Contributor, criticality code, and nuclear data source or library

Country	Institute/Company	Criticality code	Nuclear data source /Library	Group	Comments
Belgium	Tractebell Engineering - Suez	MCNP5 Vers. 1.40	ENDF/B-V ENDF/B-VI (Zr)	point	
Finland	Technical Research Centre of Finland (VTT)	MCNP4C	MCB / JEF 2.2	point	
France	Commissariat à l'Énergie (CEA)	TRIPOLI 4.3.3	JEF2.2	point	
France	L'Institute de Radioprotection et de Sûreté Nucléaire (IRSN)	APOLLO2 - MORET4			CRISTAL package (see Ref. [13])
France	TN International	APOLLO2.5 - MORET4-B			CRISTAL (V1.0) package (see References [13] and [14])
Germany	AREVA NP GmbH	KENO V.a (SCALE 5.1)	ENBF/B-V	44 groups	x-section processing: BONAMI - NITAWL III
	AREVA NP GmbH	MCNP5 Vers. 1.30	ENDF/B-VI (.6 and .8)	point	several fission products: ENDF/B-V
	AREVA NP GmbH	MCNP5 Vers. 1.40	LANL / T-16	point	
Germany	Bundesamt für Strahlenschutz (BfS)	KENO-VI (SCALE 4.4a)	ENBF/B-V	238 groups	x-section processing: BONAMI - NITAWL II
	Bundesamt für Strahlenschutz (BfS)	KENO-VI (SCALE 5.0)	ENBF/B-V	238 groups	x-section processing: BONAMI - NITAWL III
UK	Serco Group plc	MONK Vers. 9A_RU1	JEF2.2	point	DICE nuclear data library
US	Oak Ridge National Laboratory (ORNL)	KENO V.a (SCALE 5.1)	ENDF/B-VI.7 / v6-238	238 groups	x-section processing: BONAMI - CENTRM -PMC
	Oak Ridge National Laboratory (ORNL)	MCNP5 Vers. 1.40	ENDF/B-VI.6	point	several fission products: ENDF/B-V
Japan	Japan Nuclear Energy Safety Organization (JNES)	MVP-ORBURN (Vers 1.5)	JENDL-3.3	point	own burn-up calculations

Table 8.1: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Neutron multiplication factors k_{eff}

Contributor ↓	k_{eff}											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.98859	0.98875	0.98913	0.99091	0.99319	0.99659	0.99998	1.00375	1.00686	1.01241	1.01613	1.01898
VTT	0.97957	0.97980	0.98076	0.98182	0.98501	0.98799	0.99131	0.99541	0.99851	1.00408	1.00852	1.01125
CEA	0.98192		0.98351		0.98734		0.99416		1.00040	1.00603		1.01195
IRSN	0.98277	0.98320	0.98348	0.98534	0.98772	0.99105	0.99436	0.99803	1.00110	1.00648	1.01010	1.01226
TN International	0.98862	0.98883	0.98858	0.99101	0.99358	0.99718	1.00063	1.00420	1.00703	1.01244	1.01570	1.01774
AREVA (SCALE 5.1)	0.98384	0.98409	0.98453	0.98633	0.98859	0.99226	0.99573	0.99949	1.00262	1.00796	1.01175	1.01430
AREVA (MCNP5 1.30)	0.98075	0.98097	0.98121	0.98317	0.98551	0.98888	0.99242	0.99620	0.99910	1.00455	1.00824	1.01081
AREVA (MCNP5 1.40)									1.00048			
BfS (SCALE 4.4a)	0.97940		0.97960		0.98270		0.99400		0.99750	1.00290		1.00970
BfS (SCALE 5.0)	0.97937		0.98014		0.98436		0.99126		0.99805	1.00333		1.00952
Serco Group	0.98200	0.98160	0.98270	0.98380	0.98600	0.98960	0.99400	0.99740	1.00070	1.00540	1.00950	1.01130
ORNL (SCALE 5.1)	0.97783		0.97840		0.98242		0.98922		0.99631	1.00151		1.00772
ORNL (MCNP5)	0.98044		0.98148		0.98539		0.99232		0.99921	1.00454		1.01067
arithmetic mean	0.98209	0.98389	0.98279	0.98605	0.98682	0.99194	0.99412	0.99921	1.00061	1.00597	1.01142	1.01218
variance	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
sqrt of variance	0.00347	0.00363	0.00334	0.00365	0.00358	0.00366	0.00338	0.00351	0.00327	0.00346	0.00328	0.00331
standard deviation of the mean	0.00100	0.00137	0.00096	0.00138	0.00103	0.00138	0.00098	0.00133	0.00091	0.00100	0.00124	0.00096

Table continued on next page.

Table 8.1 continued

Contributor ↓ CR insertion depth/cm →	k_{eff} 94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	1.02184					1.02506
VTT	1.01284					1.01531
CEA						1.01657
IRSN	1.01486					1.01747
TN International	1.02070					1.02260
AREVA (SCALE 5.1)	1.01723		1.01942			1.01980
AREVA (MCNP5 1.30)	1.01376	1.01542		1.01622	1.01647	1.01644
AREVA (MCNP5 1.40)						0.00000
BfS (SCALE 4.4a)						1.01540
BfS (SCALE 5.0)						1.01492
Serco Group	1.01540					1.01580
ORNL (SCALE 5.1)						1.01304
ORNL (MCNP5)						1.01635
arithmetic mean	1.01666	1.01542	1.01942	1.01622	1.01647	1.01740
variance	0.00001					0.00001
sqrt of variance	0.00345					0.00344
standard deviation of the mean	0.00130					0.00099

Table 8.2: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Standard deviations $s(k_{eff})$ of the k_{eff} values

Contributor ↓	$s(k_{eff})$											
CR insertion depth/cm →	**0.00000**	**5.22000**	**10.45000**	**15.67000**	**20.90000**	**26.12000**	**31.35000**	**36.57000**	**41.80000**	**52.25000**	**62.70000**	**73.15000**
Tractebel	0.00006	0.00003	0.00008	0.00008	0.00003	0.00008	0.00002	0.00009	0.00009	0.00004	0.00002	0.00005
VTT	0.00026	0.00026	0.00026	0.00027	0.00026	0.00027	0.00026	0.00026	0.00027	0.00026	0.00026	0.00026
CEA	0.00032		0.00032		0.00032		0.00033		0.00033	0.00032		0.00033
IRSN	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009
TN International	0.00017	0.00017	0.00015	0.00025	0.00019	0.00009	0.00005	0.00013	0.00019	0.00012	0.00018	0.00006
AREVA (SCALE 5.1)	0.00004	0.00005	0.00005	0.00005	0.00005	0.00005	0.00010	0.00005	0.00014	0.00005	0.00005	0.00005
AREVA (MCNP5 1.30)	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007
AREVA (MCNP5 1.40)									0.00006			
BfS (SCALE 4.4a)	0.00040		0.00040		0.00050		0.00040		0.00050	0.00040		0.00040
BfS (SCALE 5.0)	0.00017		0.00017		0.00016		0.00017		0.00018	0.00017		0.00017
Serco Group	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
ORNL (SCALE 5.1)	0.00008		0.00007		0.00008		0.00008		0.00008	0.00008		0.00008
ORNL (MCNP5)	0.00007		0.00007		0.00007		0.00007		0.00007	0.00007		0.00007

Table continued on next page.

Table 8.2 continued

Contributor ↓	$s(k_{eff})$					
CR insertion depth/cm →	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00006					0.00003
VTT	0.00026					0.00025
CEA						0.00033
IRSN	0.00010					0.00009
TN International	0.00010					0.00027
AREVA (SCALE 5.1)	0.00009		0.00005			0.00005
AREVA (MCNP5 1.30)	0.00006	0.00006		0.00006	0.00006	0.00007
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.00040
BfS (SCALE 5.0)						0.00017
Serco Group	0.00030					0.00030
ORNL (SCALE 5.1)						0.00007
ORNL (MCNP5)						0.00007

Table 8.3: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Neutron multiplication factors k_{eff}

Contributor ↓	k_{eff}											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.98082	0.98090	0.98083	0.98099	0.98120	0.98140	0.98179	0.98275	0.98472	0.99077	0.99647	1.00190
VTT	0.97124	0.97091	0.97123	0.97141	0.97138	0.97122	0.97204	0.97283	0.97478	0.98072	0.98517	0.99080
CEA	0.97275		0.97258		0.97305		0.97410		0.97665	0.98159		0.99409
IRSN	0.97186	0.97201	0.97184	0.97192	0.97212	0.97220	0.97291	0.97391	0.97591	0.98174	0.98775	0.99303
TN International	0.97610	0.97621	0.97665	0.97663	0.97662	0.97679	0.97680	0.97892	0.98063	0.98687	0.99310	0.99798
AREVA (SCALE 5.1)	0.97444	0.97435	0.97448	0.97454	0.97460	0.97479	0.97535	0.97636	0.97844	0.98454	0.99053	0.99575
AREVA (MCNP5 1.30)	0.97147	0.97159	0.97151	0.97166	0.97168	0.97173	0.97223	0.97330	0.97530	0.98132	0.98715	0.99220
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.96970		0.96900		0.97020		0.97060		0.97400	0.97980		0.99060
BfS (SCALE 5.0)	0.97007		0.97008		0.97025		0.97170		0.97456	0.98037		0.99078
Serco Group	0.97240	0.97170	0.97270	0.97170	0.97310	0.97230	0.97270	0.97390	0.97590	0.98100	0.98730	0.99270
ORNL (SCALE 5.1)	0.96824		0.96840		0.96850		0.96922		0.97221	0.97797		0.98910
ORNL (MCNP5)	0.97116		0.97132		0.97149		0.97218		0.97525	0.98070		0.99219
arithmetic mean	0.97252	0.97395	0.97255	0.97412	0.97285	0.97435	0.97347	0.97599	0.97653	0.98228	0.98964	0.99343
sqrt of the variance	0.00334	0.00359	0.00344	0.00360	0.00338	0.00368	0.00330	0.00366	0.00335	0.00350	0.00397	0.00360
standard deviation of the mean	0.00096	0.00136	0.00099	0.00136	0.00098	0.00139	0.00095	0.00138	0.00097	0.00101	0.00150	0.00104

Table continued on next page.

Table 8.3 continued

Contributor ↓ CR insertion depth/cm →	k_{eff} 94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	1.00943					1.02723
VTT	0.99865					1.01756
CEA						1.01858
IRSN	1.00085					1.01821
TN International	1.00559					1.02271
AREVA (SCALE 5.1)	1.00335		1.01419			1.02126
AREVA (MCNP5 1.30)	1.00002	1.00680		1.01164	1.01497	1.01787
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						1.01610
BfS (SCALE 5.0)						1.01633
Serco Group	1.00050					1.01950
ORNL (SCALE 5.1)						1.01443
ORNL (MCNP5)						1.01782
arithmetic mean	1.00263	1.00680	1.01419	1.01164	1.01497	1.01897
sqrt of variance	0.00378					0.00342
standard deviation of the mean	0.00143					0.00099

Table 8.4: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Standard deviations $s(k_{eff})$ of the k_{eff} values

Contributor ↓	$s(k_{eff})$											
CR insertion depth/cm →	**0.00000**	**5.22000**	**10.45000**	**15.67000**	**20.90000**	**26.12000**	**31.35000**	**36.57000**	**41.80000**	**52.25000**	**62.70000**	**73.15000**
Tractebel	0.00012	0.00007	0.00004	0.00004	0.00010	0.00005	0.00004	0.00003	0.00008	0.00005	0.00007	0.00003
VTT	0.00024	0.00025	0.00025	0.00025	0.00025	0.00026	0.00025	0.00025	0.00026	0.00026	0.00026	0.00025
CEA	0.00031		0.00031		0.00031		0.00031		0.00030	0.00031		0.00032
IRSN	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00009	0.00009	0.00009
TN International	0.00013	0.00016	0.00010	0.00009	0.00017	0.00008	0.00009	0.00015	0.00011	0.00008	0.00009	0.00026
AREVA (SCALE 5.1)	0.00005	0.00004	0.00005	0.00004	0.00005	0.00004	0.00005	0.00004	0.00005	0.00005	0.00005	0.00005
AREVA (MCNP5 1.30)	0.00006	0.00013	0.00006	0.00006	0.00006	0.00012	0.00006	0.00006	0.00006	0.00006	0.00006	0.00006
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.00030		0.00030		0.00030		0.00030		0.00030	0.00040		0.00040
BfS (SCALE 5.0)	0.00027		0.00028		0.00025		0.00026		0.00025	0.00028		0.00029
Serco Group	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
ORNL (SCALE 5.1)	0.00007		0.00007		0.00008		0.00007		0.00007	0.00008		0.00008
ORNL (MCNP5)	0.00007		0.00007		0.00007		0.00007		0.00007	0.00015		0.00007

Table continued on next page.

Table 8.4 continued

Contributor ↓ / CR insertion depth/cm →	s(k_{eff})					
	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00010					0.00003
VTT	0.00026					0.00024
CEA						0.00032
IRSN	0.00009					0.00008
TN International	0.00022					0.00009
AREVA (SCALE 5.1)	0.00005		0.00005			0.00005
AREVA (MCNP5 1.30)	0.00013	0.00006		0.00006	0.00013	0.00006
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.00030
BfS (SCALE 5.0)						0.00028
Serco Group	0.00030					0.00030
ORNL (SCALE 5.1)						0.00008
ORNL (MCNP5)						0.00007

Table 8.5: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Neutron multiplication factors k_{eff}

Contributor ↓	k_{eff}											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.89079	0.89208	0.89370	0.90067	0.90789	0.91702	0.92456	0.93087	0.93592	0.94305	0.94723	0.94978
VTT	0.88029	0.88150	0.88291	0.89015	0.89726	0.90683	0.91428	0.92075	0.92584	0.93233	0.93622	0.93886
CEA	0.88268		0.88559		0.90011		0.91644		0.92834	0.93419		0.94115
IRSN	0.88297	0.88443	0.88607	0.89281	0.90040	0.90937	0.91662	0.92303	0.92748	0.93404	0.93789	0.94006
TN International	0.88889	0.89034	0.89216	0.89958	0.90700	0.91615	0.92298	0.92890	0.93385	0.94014	0.94347	0.94557
AREVA (SCALE 5.1)	0.88481	0.88607	0.88787	0.89503	0.90244	0.91150	0.91893	0.92524	0.93019	0.93692	0.94097	0.94321
AREVA (MCNP5 1.30)	0.88115	0.88245	0.88424	0.89118	0.89858	0.90768	0.91493	0.92128	0.92613	0.93318	0.93707	0.93941
AREVA (MCNP5 1.40)						0.90890						
BfS (SCALE 4.4a)	0.88020		0.88320		0.89800		0.91360		0.92480	0.93170		0.93870
BfS (SCALE 5.0)	0.88047		0.88359		0.89820		0.91407		0.92522	0.93250		0.93879
Serco Group	0.88230	0.88370	0.88570	0.89270	0.89900	0.90970	0.91650	0.92250	0.92720	0.93390	0.93840	0.93980
ORNL (SCALE 5.1)	0.87878		0.88162		0.89596		0.91232		0.92329	0.93033		0.93639
ORNL (MCNP5)	0.88113		0.88423		0.89862		0.91490		0.92633	0.93305		0.93920
arithmetic mean	0.88287	0.88579	0.88591	0.89459	0.90029	0.91089	0.91668	0.92465	0.92788	0.93461	0.94018	0.94091
sqrt of variance	0.00363	0.00400	0.00369	0.00408	0.00372	0.00400	0.00375	0.00389	0.00374	0.00368	0.00398	0.00365
standard deviation of the mean	0.00105	0.00151	0.00106	0.00154	0.00107	0.00151	0.00108	0.00147	0.00108	0.00106	0.00150	0.00105

Table continued on next page.

Table 8.5 continued

Contributor ↓	k_{eff}					
CR insertion depth/cm →	**94.05000**	**125.40000**	**156.75000**	**167.20000**	**219.45000**	**365.76000**
Tractebel	0.95215					0.95382
VTT	0.94110					0.94114
CEA						0.94363
IRSN	0.94225					0.94310
TN International	0.94762					0.94874
AREVA (SCALE 5.1)	0.94536		0.94666			0.94667
AREVA (MCNP5 1.30)	0.94151	0.94265		0.94304	0.94288	0.94306
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.94230
BfS (SCALE 5.0)						0.94234
Serco Group	0.94230					0.94220
ORNL (SCALE 5.1)						0.93996
ORNL (MCNP5)						0.94290
arithmetic mean	0.94461	0.94265	0.94666	0.94304	0.94288	0.94416
sqrt of variance	0.00407					0.00384
standard deviation of the mean	0.00154					0.00111

Table 8.6: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Standard deviations $s(k_{eff})$ of the k_{eff} values

Contributor ↓	$s(k_{eff})$											
CR insertion depth/cm →	**0.00000**	**5.22000**	**10.45000**	**15.67000**	**20.90000**	**26.12000**	**31.35000**	**36.57000**	**41.80000**	**52.25000**	**62.70000**	**73.15000**
Tractebel	0.00004	0.00008	0.00007	0.00007	0.00006	0.00002	0.00012	0.00003	0.00005	0.00007	0.00004	0.00009
VTT	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00026	0.00026	0.00025	0.00026	0.00025	0.00025
CEA	0.00030		0.00032		0.00032		0.00031		0.00031	0.00031		0.00031
IRSN	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009	0.00009
TN International	0.00011	0.00027	0.00011	0.00017	0.00011	0.00017	0.00009	0.00022	0.00013	0.00009	0.00019	0.00009
AREVA (SCALE 5.1)	0.00011	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.00009
AREVA (MCNP5 1.30)	0.00006	0.00006	0.00012	0.00006	0.00006	0.00012	0.00006	0.00006	0.00006	0.00018	0.00013	0.00014
AREVA (MCNP5 1.40)						0.00017						
BfS (SCALE 4.4a)	0.00040		0.00040		0.00050		0.00040		0.00050	0.00040		0.00040
BfS (SCALE 5.0)	0.00016		0.00016		0.00018		0.00017		0.00018	0.00018		0.00016
Serco Group	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
ORNL (SCALE 5.1)	0.00008		0.00008		0.00008		0.00007		0.00008	0.00008		0.00007
ORNL (MCNP5)	0.00007		0.00007		0.00007		0.00007		0.00007	0.00007		0.00007

Table continued on next page.

Table 8.6 continued

Contributor ↓	$s(k_{eff})$						
CR insertion depth/cm →	73.15000	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00009	0.00008					0.00010
VTT	0.00025	0.00026					0.00025
CEA	0.00031						0.00032
IRSN	0.00009	0.00009					0.00008
TN International	0.00009	0.00009					0.00009
AREVA (SCALE 5.1)	0.00009	0.00005		0.00005			0.00005
AREVA (MCNP5 1.30)	0.00014	0.00006	0.00006		0.00006	0.00006	0.00006
AREVA (MCNP5 1.40)							
BfS (SCALE 4.4a)	0.00040						0.00050
BfS (SCALE 5.0)	0.00016						0.00016
Serco Group	0.00030	0.00030					0.00030
ORNL (SCALE 5.1)	0.00007						0.00007
ORNL (MCNP5)	0.00007						0.00007

Table 8.7: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Neutron multiplication factors k_{eff}

Contributor ↓	k_{eff}											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.85418	0.85423	0.85430	0.85460	0.85561	0.86136	0.87073	0.88015	0.88887	0.90265	0.91283	0.92012
VTT	0.84161	0.84141	0.84149	0.84144	0.84238	0.84744	0.85724	0.86638	0.87610	0.89016	0.89932	0.90705
CEA	0.84296		0.84295		0.84425		0.85860		0.87699	0.89066		0.90901
IRSN	0.84076	0.84073	0.84073	0.84100	0.84235	0.84883	0.85822	0.86762	0.87613	0.88973	0.90020	0.90733
TN International	0.84440	0.84453	0.84467	0.84512	0.84656	0.85341	0.86291	0.87258	0.88148	0.89511	0.90509	0.91198
AREVA (SCALE 5.1)	0.84486	0.84489	0.84486	0.84517	0.84647	0.85264	0.86231	0.87184	0.88045	0.89430	0.90420	0.91171
AREVA (MCNP5 1.30)	0.84151	0.84155	0.84159	0.84188	0.84311	0.84888	0.85847	0.86796	0.87638	0.89034	0.90032	0.90799
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.84070		0.84110		0.84270		0.85730		0.87630	0.88980		0.90700
BfS (SCALE 5.0)	0.84075		0.84146		0.84323		0.85852		0.87693	0.88993		0.90752
Serco Group	0.84210	0.84150	0.84240	0.84240	0.84320	0.84850	0.85780	0.86770	0.87700	0.89070	0.90040	0.90810
ORNL (SCALE 5.1)	0.83869		0.83892		0.84025		0.85558		0.87370	0.88738		0.90484
ORNL (MCNP5)	0.84132		0.84149		0.84293		0.85833		0.87631	0.89032		0.90777
arithmetic mean	0.84282	0.84412	0.84300	0.84452	0.84442	0.85158	0.85967	0.87060	0.87805	0.89176	0.90319	0.90920
sqrt of the variance	0.00395	0.00475	0.00391	0.00476	0.00393	0.00486	0.00404	0.00481	0.00397	0.00400	0.00478	0.00396
standard deviation of the mean	0.00114	0.00180	0.00113	0.00180	0.00113	0.00184	0.00117	0.00182	0.00115	0.00115	0.00181	0.00114

Table continued on next page.

Table 8.7 continued

Contributor ↓ CR insertion depth/cm →	k_{eff} 94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.93008					0.95040
VTT	0.91745					0.93700
CEA						0.93893
IRSN	0.91678					0.93669
TN International	0.92204					0.94106
AREVA (SCALE 5.1)	0.92153		0.93403			0.94150
AREVA (MCNP5 1.30)	0.91778	0.92587		0.93139	0.93474	0.93806
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.93740
BfS (SCALE 5.0)						0.93708
Serco Group	0.91850					0.93770
ORNL (SCALE 5.1)						0.93454
ORNL (MCNP5)						0.93765
arithmetic mean	0.92059	0.92587	0.93403	0.93139	0.93474	0.93900
sqrt of the variance	0.00465					0.00405
standard deviation of the mean	0.00176					0.00117

Table 8.8: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Standard deviations $s(k_{eff})$ of the k_{eff} values

Contributor ↓	$s(k_{eff})$											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.00006	0.00004	0.00004	0.00005	0.00001	0.00005	0.00006	0.00002	0.00004	0.00007	0.00006	0.00003
VTT	0.00022	0.00023	0.00023	0.00023	0.00022	0.00024	0.00024	0.00025	0.00024	0.00026	0.00025	0.00024
CEA	0.00030		0.00030		0.00030		0.00032		0.00032	0.00032		0.00031
IRSN	0.00007	0.00007	0.00007	0.00007	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008	0.00008
TN International	0.00008	0.00011	0.00004	0.00052	0.00007	0.00020	0.00013	0.00034	0.00013	0.00008	0.00025	0.00012
AREVA (SCALE 5.1)	0.00008	0.00007	0.00004	0.00007	0.00004	0.00004	0.00005	0.00004	0.00005	0.00005	0.00005	0.00010
AREVA (MCNP5 1.30)	0.00006	0.00006	0.00006	0.00006	0.00015	0.00006	0.00006	0.00006	0.00012	0.00006	0.00006	0.00017
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.00030		0.00030		0.00030		0.00030		0.00030	0.00030		0.00040
BfS (SCALE 5.0)	0.00025		0.00024		0.00023		0.00028		0.00031	0.00029		0.00028
Serco Group	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030	0.00030
ORNL (SCALE 5.1)	0.00007		0.00007		0.00006		0.00008		0.00007	0.00007		0.00007
ORNL (MCNP5)	0.00006		0.00006		0.00006		0.00007		0.00008	0.00007		0.00007

Table continued on next page.

Table 8.8 continued

Contributor ↓	**$s(k_{eff})$**					
CR insertion depth/cm →	**94.05000**	**125.40000**	**156.75000**	**167.20000**	**219.45000**	**365.76000**
Tractebel	**0.00005**					**0.00006**
VTT	**0.00024**					**0.00025**
CEA						**0.00030**
IRSN	**0.00008**					**0.00008**
TN International	**0.00009**					**0.00010**
AREVA (SCALE 5.1)	**0.00011**		**0.00005**			**0.00008**
AREVA (MCNP5 1.30)	**0.00006**	**0.00006**		**0.00006**	**0.00006**	**0.00006**
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						**0.00030**
BfS (SCALE 5.0)						**0.00024**
Serco Group	**0.00030**					**0.00030**
ORNL (SCALE 5.1)						**0.00007**
ORNL (MCNP5)						**0.00007**

Table 8.9: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 0 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.000000E+00	0.00000E+00	1.04500E+01	5.22500E+00	1.000115E-04	5.811099E-06	4.725389E-05	6.983257E-06		1.124561E-05
2.000000E+00	1.04500E+01	2.09000E+01	1.56750E+01	1.211230E-04	7.090551E-06	5.936454E-05	6.757258E-06		1.363213E-05
3.000000E+00	2.09000E+01	3.13500E+01	2.61250E+01	1.271613E-04	1.030776E-05	6.488024E-05	3.335042E-06		1.342849E-05
4.000000E+00	3.13500E+01	4.18000E+01	3.65750E+01	1.208475E-04	1.482609E-05	6.524391E-05	5.412863E-06		1.003883E-05
5.000000E+00	4.18000E+01	5.22500E+01	4.70250E+01	1.277420E-04	2.748748E-05	6.975815E-05	6.653978E-06		7.655883E-06
6.000000E+00	5.22500E+01	6.27000E+01	5.74750E+01	1.419038E-04	4.485011E-05	7.836145E-05	8.369651E-06		6.347139E-06
7.000000E+00	6.27000E+01	1.04500E+02	8.36000E+01	2.548210E-04	1.297081E-04	1.662580E-04	1.481681E-05		5.710304E-06
8.000000E+00	1.04500E+02	1.46300E+02	1.25400E+02	8.783118E-04	5.328328E-04	6.659185E-04	2.051408E-05		1.196191E-05
9.000000E+00	1.46300E+02	1.88110E+02	1.67205E+02	3.053553E-03	2.003245E-03	2.508797E-03	5.081511E-05		3.329239E-05
1.000000E+01	1.88110E+02	2.09010E+02	1.98560E+02	7.109933E-03	4.905207E-03	6.049446E-03	9.833993E-05		5.452767E-05
1.100000E+01	2.09010E+02	2.71710E+02	2.40360E+02	2.252073E-02	1.859812E-02	2.054930E-02	1.540522E-04		8.031098E-05
1.200000E+01	2.71710E+02	2.92610E+02	2.82160E+02	5.673698E-02	5.139690E-02	5.454181E-02	2.316528E-04		9.031487E-05
1.300000E+01	2.92610E+02	3.03060E+02	2.97835E+02	8.077883E-02	7.540001E-02	7.912136E-02	2.384354E-04		4.786998E-05
1.400000E+01	3.03060E+02	3.13510E+02	3.08285E+02	1.013485E-01	9.698788E-02	1.006160E-01	1.743945E-04		9.630816E-05
1.500000E+01	3.13510E+02	3.23960E+02	3.18735E+02	1.244423E-01	1.220680E-01	1.251232E-01	1.561590E-04		1.699697E-04
1.600000E+01	3.23960E+02	3.34410E+02	3.29185E+02	1.471648E-01	1.482963E-01	1.493047E-01	1.214261E-04		1.697288E-04
1.700000E+01	3.34410E+02	3.44860E+02	3.39635E+02	1.633490E-01	1.687816E-01	1.665565E-01	2.387114E-04		1.282574E-04
1.800000E+01	3.44860E+02	3.55310E+02	3.50085E+02	1.613003E-01	1.709136E-01	1.641501E-01	2.838550E-04		8.141919E-05
1.900000E+01	3.55310E+02	3.65760E+02	3.60535E+02	1.303230E-01	1.398762E-01	1.302617E-01	1.498451E-04		1.380900E-04

Table 8.10: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 5.22 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.000000E+00	0.00000E+00	1.04500E+01	5.22500E+00	5.810235E-05	1.968511E-05	3.185739E-05	1.271594E-05		7.474101E-06
2.000000E+00	1.04500E+01	2.09000E+01	1.56750E+01	7.648923E-05	2.438104E-05	4.105402E-05	1.623132E-05		9.627680E-06
3.000000E+00	2.09000E+01	3.13500E+01	2.61250E+01	8.043748E-05	3.006852E-05	4.478223E-05	1.413139E-05		1.002855E-05
4.000000E+00	3.13500E+01	4.18000E+01	3.65750E+01	7.500855E-05	3.272854E-05	4.533641E-05	8.766318E-06		8.977543E-06
5.000000E+00	4.18000E+01	5.22500E+01	4.70250E+01	8.075978E-05	4.075615E-05	5.218442E-05	6.347822E-06		7.823761E-06
6.000000E+00	5.22500E+01	6.27000E+01	5.74750E+01	9.298515E-05	4.383475E-05	6.517203E-05	3.370826E-06		7.181896E-06
7.000000E+00	6.27000E+01	1.04500E+02	8.36000E+01	1.907738E-04	9.568242E-05	1.483735E-04	8.428667E-06		4.310500E-06
8.000000E+00	1.04500E+02	1.46300E+02	1.25400E+02	7.582848E-04	4.117302E-04	5.777941E-04	3.776169E-05		5.369243E-06
9.000000E+00	1.46300E+02	1.88110E+02	1.67205E+02	2.756398E-03	1.692670E-03	2.193320E-03	8.475724E-05		2.524254E-05
1.000000E+01	1.88110E+02	2.09010E+02	1.98560E+02	6.369618E-03	4.361665E-03	5.299282E-03	1.267975E-04		5.619443E-05
1.100000E+01	2.09010E+02	2.71710E+02	2.40360E+02	1.998850E-02	1.609041E-02	1.793055E-02	2.108940E-04		5.823133E-05
1.200000E+01	2.71710E+02	2.92610E+02	2.82160E+02	5.017528E-02	4.483180E-02	4.783395E-02	1.942147E-04		6.642715E-05
1.300000E+01	2.92610E+02	3.03060E+02	2.97835E+02	7.131528E-02	6.619774E-02	6.962887E-02	2.045296E-04		4.874420E-05
1.400000E+01	3.03060E+02	3.13510E+02	3.08285E+02	8.941973E-02	8.511245E-02	8.856248E-02	1.424908E-04		5.922352E-05
1.500000E+01	3.13510E+02	3.23960E+02	3.18735E+02	1.098675E-01	1.072315E-01	1.101659E-01	1.256384E-04		1.332794E-04
1.600000E+01	3.23960E+02	3.34410E+02	3.29185E+02	1.298625E-01	1.300537E-01	1.316098E-01	2.103291E-04		1.711840E-04
1.700000E+01	3.34410E+02	3.44860E+02	3.39635E+02	1.442130E-01	1.486724E-01	1.471077E-01	2.440888E-04		1.814512E-04
1.800000E+01	3.44860E+02	3.55310E+02	3.50085E+02	1.426378E-01	1.508831E-01	1.454590E-01	2.356746E-04		2.037729E-04
1.900000E+01	3.55310E+02	3.60540E+02	3.57925E+02	1.249535E-01	1.342027E-01	1.251001E-01	2.438604E-04		2.213387E-04
2.000000E+01	3.60540E+02	3.65760E+02	3.63150E+02	1.070285E-01	1.099710E-01	1.081024E-01	2.667427E-04		2.029383E-04

Table 8.11: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 10.45 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.49176E-05	1.65037E-05	4.16414E-05	5.01027E-06		1.99694E-05
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	5.60690E-05	2.04994E-05	5.26220E-05	6.07884E-06		2.24084E-05
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	6.55481E-05	1.99371E-05	5.89698E-05	5.19351E-06		2.27533E-05
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	6.85019E-05	2.00433E-05	5.78936E-05	3.17657E-06		1.77511E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	7.99727E-05	2.60020E-05	6.44517E-05	4.72504E-06		1.47554E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	9.83715E-05	3.49028E-05	7.57061E-05	6.59975E-06		1.13136E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	2.10014E-04	1.20990E-04	1.62078E-04	1.28861E-05		1.01219E-05
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	8.00887E-04	5.04754E-04	6.42115E-04	2.90347E-05		1.11315E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	2.84257E-03	2.00043E-03	2.40619E-03	3.33514E-05		2.00845E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	6.64353E-03	5.02349E-03	5.86023E-03	7.44373E-05		5.41434E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.18829E-02	1.83663E-02	2.00790E-02	2.41897E-04		7.87897E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	5.63140E-02	5.08426E-02	5.32934E-02	2.10303E-04		1.36420E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	8.02864E-02	7.52046E-02	7.78321E-02	9.15565E-05		7.50095E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.00800E-01	9.65225E-02	9.93320E-02	1.57868E-05		3.17785E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.23990E-01	1.21629E-01	1.24051E-01	5.90581E-05		1.58892E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.47073E-01	1.47955E-01	1.48782E-01	9.99350E-05		2.53090E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.63683E-01	1.68909E-01	1.67075E-01	1.39955E-04		2.88517E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.62076E-01	1.71018E-01	1.65694E-01	2.45683E-04		2.39320E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.32986E-01	1.41766E-01	1.34441E-01	3.24839E-04		2.20168E-04

Table 8.12: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 15.67 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.05968E-05	1.52476E-05	2.00528E-05	9.42827E-06		3.29925E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	5.10478E-05	2.01862E-05	2.66445E-05	9.75704E-06		4.83135E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	5.86151E-05	2.72999E-05	3.02920E-05	1.05363E-05		5.16448E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	5.95398E-05	2.64499E-05	3.29622E-05	1.00387E-05		4.02993E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	6.25038E-05	2.23711E-05	3.91940E-05	8.38490E-06		2.72783E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	7.37258E-05	2.90725E-05	4.75220E-05	7.15762E-06		1.99657E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.51962E-04	7.49519E-05	1.13651E-04	9.04753E-06		1.66314E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	5.72610E-04	3.32304E-04	4.58342E-04	1.29525E-05		4.46074E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	2.13401E-03	1.40551E-03	1.72927E-03	3.79397E-05		5.32790E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	5.13061E-03	3.64602E-03	4.30447E-03	6.32225E-05		1.29035E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.72610E-02	1.41879E-02	1.56412E-02	2.99628E-05		3.50692E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.54454E-02	4.07386E-02	4.35298E-02	1.83240E-04		8.63522E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.58804E-02	6.14709E-02	6.43599E-02	1.91828E-04		4.04270E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	8.37840E-02	8.04366E-02	8.28249E-02	1.77588E-04		8.81087E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.04446E-01	1.02786E-01	1.04433E-01	1.67538E-04		1.41495E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.25568E-01	1.26381E-01	1.26557E-01	9.93461E-05		6.31167E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.42038E-01	1.45976E-01	1.43910E-01	9.35272E-05		1.31388E-04
1.80000E+01	3.448600E+02	3.500900E+02	3.474750E+02	1.47668E-01	1.54167E-01	1.49055E-01	1.92404E-04		1.98823E-04
1.90000E+01	3.500900E+02	3.553100E+02	3.527000E+02	1.42164E-01	1.49549E-01	1.45578E-01	2.61524E-04		2.07373E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.17409E-01	1.18708E-01	1.17309E-01	3.30035E-04		2.31575E-04

Table 8.13: Results from the contributors for the 30 MWd/kg U axial burn-up profile:
Fission densities for CR insertion depth d_{CR} = 20.90 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	2.74042E-05	3.98378E-06	2.03042E-05	4.18340E-06		6.53272E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	3.68194E-05	5.45309E-06	2.69940E-05	6.19708E-06		7.10255E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	4.21934E-05	7.85701E-06	2.91732E-05	7.67762E-06		6.65168E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	4.60114E-05	8.21786E-06	3.04218E-05	4.82552E-06		5.18503E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	5.64194E-05	1.18466E-05	3.45302E-05	5.09618E-06		4.18486E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	6.98357E-05	1.87301E-05	4.13321E-05	5.65791E-06		3.65728E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.44297E-04	7.15775E-05	9.41848E-05	1.26845E-05		2.65206E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	5.48397E-04	3.53938E-04	4.03466E-04	2.20543E-05		1.34830E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	2.06872E-03	1.38673E-03	1.67816E-03	3.96011E-05		2.15396E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	5.10932E-03	3.73788E-03	4.38306E-03	7.69408E-05		4.55659E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.81792E-02	1.51166E-02	1.67571E-02	1.48682E-04		1.50618E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	5.00576E-02	4.51469E-02	4.80745E-02	1.29811E-04		1.53330E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	7.40186E-02	6.88486E-02	7.23222E-02	6.63000E-05		1.23175E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	9.55700E-02	9.11715E-02	9.43602E-02	1.17171E-04		7.11152E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.20792E-01	1.18369E-01	1.20560E-01	1.05038E-04		2.14623E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.47356E-01	1.47762E-01	1.48339E-01	7.41373E-05		2.33825E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.68483E-01	1.73067E-01	1.70763E-01	5.72002E-05		4.05166E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.76641E-01	1.85288E-01	1.80805E-01	1.29242E-04		5.17066E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.40754E-01	1.49624E-01	1.41277E-01	2.54131E-04		3.25891E-04

Table 8.14: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 26.12 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.49195E-05	2.89999E-06	1.39608E-05	1.23323E-06		3.37795E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.95892E-05	2.90112E-06	1.70248E-05	1.88478E-06		5.36987E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.29967E-05	4.62186E-06	1.70812E-05	1.98528E-06		6.04285E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.54590E-05	5.12462E-06	1.66534E-05	4.28974E-06		5.19390E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.96841E-05	7.21507E-06	1.76770E-05	4.34107E-06		3.51895E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	3.51474E-05	1.31645E-05	2.18501E-05	4.94505E-06		2.34957E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.46304E-05	4.12637E-05	5.62827E-05	4.92912E-06		4.01995E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	3.08550E-04	2.34007E-04	2.57714E-04	1.23667E-05		7.39729E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.30446E-03	1.02036E-03	1.12050E-03	5.04051E-06		1.96003E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	3.44305E-03	2.83768E-03	2.97637E-03	2.00334E-06		4.51526E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.35666E-02	1.15553E-02	1.22976E-02	7.44879E-05		8.56357E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	3.94953E-02	3.56821E-02	3.75121E-02	1.29703E-04		4.23714E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	5.98266E-02	5.58553E-02	5.79352E-02	1.70080E-04		2.57185E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	7.85317E-02	7.49723E-02	7.70849E-02	1.66136E-04		8.30534E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.01143E-01	9.91594E-02	1.00570E-01	8.62456E-05		1.35044E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.25985E-01	1.26484E-01	1.26505E-01	1.15081E-04		1.37814E-04
1.70000E+01	3.344100E+02	3.396400E+02	3.370250E+02	1.43385E-01	1.46498E-01	1.44507E-01	1.47141E-04		1.47100E-04
1.80000E+01	3.396400E+02	3.448600E+02	3.422500E+02	1.57039E-01	1.61816E-01	1.60760E-01	1.40746E-04		1.76852E-04
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.53421E-01	1.60548E-01	1.56367E-01	1.19423E-04		1.70874E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.22328E-01	1.23261E-01	1.21946E-01	1.20053E-04		1.24105E-04

Table 8.15: Results from the contributors for the 30 MWd/kg U axial burn-up profile:
Fission densities for CR insertion depth d_{CR} = 31.35 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.15508E-05	2.03875E-06	1.15107E-05	1.61651E-06		4.46467E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.51542E-05	4.04244E-06	1.57913E-05	2.80522E-06		6.44837E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.80535E-05	5.12070E-06	1.70490E-05	3.61902E-06		4.95947E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.82804E-05	4.92961E-06	1.61066E-05	2.72300E-06		2.53267E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.99539E-05	6.18585E-06	1.61563E-05	2.86967E-06		9.13151E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.24911E-05	9.22834E-06	1.92357E-05	2.04243E-06		4.97258E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	5.71558E-05	2.76761E-05	4.38571E-05	3.67417E-06		1.19481E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.68021E-04	1.67325E-04	2.14980E-04	4.29164E-07		5.23270E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.23621E-03	8.78564E-04	1.01365E-03	2.05766E-05		1.40776E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	3.37554E-03	2.65084E-03	2.84546E-03	5.82701E-05		3.14232E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.41819E-02	1.19595E-02	1.28712E-02	2.42474E-05		5.92494E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.35691E-02	3.96095E-02	4.15066E-02	3.24702E-05		1.13005E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.77316E-02	6.34992E-02	6.56896E-02	4.76408E-05		6.29184E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	9.04996E-02	8.67175E-02	8.88443E-02	3.82241E-05		1.07800E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.18883E-01	1.16189E-01	1.18022E-01	5.72545E-05		1.13005E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.49785E-01	1.49653E-01	1.50319E-01	1.76061E-04		8.53167E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.84211E-01	1.87808E-01	1.88232E-01	1.43006E-04		7.41021E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.82171E-01	1.89444E-01	1.86141E-01	1.13020E-04		2.98982E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.43927E-01	1.51364E-01	1.44160E-01	1.68481E-04		2.26009E-05

Table 8.16: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 36.57 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	6.64128E-06	1.58721E-06	6.42883E-06	1.36671E-06		4.10360E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	8.80502E-06	3.17572E-06	8.60225E-06	1.98546E-06		5.59376E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	9.34733E-06	4.23466E-06	1.03185E-05	1.61997E-06		2.97908E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.02372E-05	6.92559E-06	1.02915E-05	1.68179E-06		4.86229E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.14073E-05	6.77430E-06	1.08248E-05	7.17532E-07		6.91570E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	1.61223E-05	9.23877E-06	1.27190E-05	2.47248E-06		7.41713E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	4.29279E-05	2.77560E-05	3.05656E-05	4.67862E-06		2.22995E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.87178E-04	1.19167E-04	1.37596E-04	8.22710E-06		1.26541E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	8.51223E-04	6.49075E-04	6.79941E-04	8.11977E-06		9.72312E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.42967E-03	1.92807E-03	2.04714E-03	2.41051E-05		2.39007E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.09592E-02	9.45436E-03	9.98639E-03	8.19677E-05		4.41827E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	3.56456E-02	3.29546E-02	3.38911E-02	4.29266E-05		1.29497E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	5.67483E-02	5.39778E-02	5.51537E-02	3.63739E-05		7.63995E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	7.72907E-02	7.49262E-02	7.60024E-02	4.91913E-05		5.77526E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.03455E-01	1.02013E-01	1.02828E-01	1.36380E-04		1.04115E-04
1.60000E+01	3.239600E+02	3.291900E+02	3.265750E+02	1.24910E-01	1.25055E-01	1.24909E-01	2.20403E-04		9.18208E-05
1.70000E+01	3.291900E+02	3.344100E+02	3.318000E+02	1.47194E-01	1.48316E-01	1.49473E-01	1.21107E-04		9.18208E-05
1.80000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.60167E-01	1.63952E-01	1.63103E-01	5.48999E-05		1.45659E-04
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.56944E-01	1.63295E-01	1.59407E-01	1.69292E-04		1.68651E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.23114E-01	1.23299E-01	1.22291E-01	2.42398E-04		1.64198E-04

Table 8.17: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 41.80 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	5.33912E-06	3.17676E-06	2.04247E-06	1.78322E-06		1.29382E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	6.88051E-06	2.64572E-06	2.90909E-06	1.67672E-06		1.45846E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	7.85464E-06	2.36540E-06	3.57341E-06	1.38896E-06		1.34219E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	8.60218E-06	2.91972E-06	3.89129E-06	7.39843E-07		1.30680E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	9.29828E-06	3.24431E-06	4.32716E-06	9.36731E-07		1.08417E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	1.16760E-05	6.28005E-06	6.76938E-06	1.12823E-06		9.70906E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	3.12157E-05	2.41824E-05	2.22816E-05	2.39923E-06		2.28300E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.73669E-04	1.32831E-04	1.29300E-04	9.12058E-06		7.49964E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	8.60300E-04	6.52564E-04	7.04499E-04	6.30800E-06		9.83961E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.50470E-03	1.94848E-03	2.11826E-03	1.46439E-05		2.32390E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.18056E-02	1.02556E-02	1.08591E-02	4.44955E-05		5.18087E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.01062E-02	3.67518E-02	3.82521E-02	1.31539E-04		1.38243E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.52655E-02	6.14982E-02	6.34104E-02	8.71742E-05		7.74782E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	9.02356E-02	8.67307E-02	8.87126E-02	8.15994E-05		2.21366E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.21375E-01	1.18959E-01	1.20744E-01	1.13554E-04		7.74782E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.64417E-01	1.64064E-01	1.66622E-01	1.10049E-04		1.25712E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.85077E-01	1.88172E-01	1.88427E-01	1.06145E-04		2.77371E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.78845E-01	1.85007E-01	1.81587E-01	1.28624E-04		2.23843E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.39254E-01	1.45782E-01	1.38387E-01	6.89605E-05		1.93933E-04

Table 8.18: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 52.25 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	2.55913E-06	1.30916E-07	3.21620E-07	1.67865E-06		1.11937E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	2.93327E-06	1.34166E-07	8.02507E-07	1.71773E-06		3.17882E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.62973E-06	4.80013E-07	1.71612E-06	1.09421E-06		3.08277E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.94767E-06	1.05346E-06	2.09350E-06	7.32866E-07		6.08537E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.07417E-06	1.70019E-06	3.02246E-06	4.85142E-07		8.97990E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.77794E-06	3.01609E-06	4.33110E-06	5.40551E-07		1.11172E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	2.41687E-05	1.39952E-05	1.76928E-05	3.79831E-07		2.49197E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.39601E-04	9.11384E-05	1.09272E-04	4.92990E-06		2.59893E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	7.08763E-04	5.15633E-04	5.74859E-04	3.34695E-06		3.96460E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.14741E-03	1.58292E-03	1.82958E-03	2.63574E-06		7.78412E-06
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.13014E-02	9.43650E-03	1.03439E-02	1.89636E-05		2.62449E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.06448E-02	3.70811E-02	3.89134E-02	9.50063E-05		5.03312E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.79476E-02	6.42399E-02	6.63823E-02	1.34847E-04		2.19663E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	9.51099E-02	9.18870E-02	9.39061E-02	1.18580E-04		3.80468E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.36505E-01	1.34353E-01	1.37367E-01	4.47747E-05		3.29495E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.65112E-01	1.65176E-01	1.67076E-01	3.76486E-05		2.90587E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.79733E-01	1.82782E-01	1.82310E-01	1.20649E-04		3.80468E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.69854E-01	1.75969E-01	1.71799E-01	1.70259E-04		5.03312E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.30752E-01	1.36865E-01	1.29360E-01	1.30671E-05		8.29211E-05

Table 8.19: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 62.70 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.58367E-06	1.80169E-08	1.07866E-06	1.35587E-06		9.66983E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	6.00628E-06	2.66506E-08	1.53832E-06	2.20100E-06		1.42921E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	6.46379E-06	1.02782E-07	1.93109E-06	2.11588E-06		1.63037E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	6.24796E-06	7.42130E-08	2.13624E-06	2.04435E-06		1.25132E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	8.06315E-06	2.80982E-07	3.05594E-06	2.24428E-06		1.77776E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	1.00113E-05	8.83038E-07	4.03511E-06	2.60976E-06		2.32516E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	2.35137E-05	1.08644E-05	1.46140E-05	3.24102E-06		2.80046E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.18618E-04	8.69092E-05	9.20795E-05	3.58907E-06		2.61844E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	6.53720E-04	5.02149E-04	5.35765E-04	1.86448E-06		8.53408E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.05114E-03	1.67614E-03	1.77518E-03	2.80749E-05		1.63505E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.15771E-02	1.01947E-02	1.07736E-02	8.23351E-05		3.35469E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.39669E-02	4.09693E-02	4.22631E-02	1.87077E-04		2.90889E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	7.45941E-02	7.12394E-02	7.27950E-02	2.90013E-04		1.90431E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.11042E-01	1.07273E-01	1.10462E-01	2.20344E-04		7.61726E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.40128E-01	1.37812E-01	1.40554E-01	8.32833E-05		7.92829E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.62422E-01	1.62652E-01	1.64171E-01	9.69358E-05		6.12151E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.71815E-01	1.74822E-01	1.74308E-01	2.29021E-04		1.11583E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.59621E-01	1.65200E-01	1.61488E-01	3.22391E-04		1.71388E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.21946E-01	1.27560E-01	1.20753E-01	2.91584E-04		1.74533E-04

Table 8.20: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 73.15 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.81356E-07	1.24678E-07	1.58034E-07	3.68968E-07		7.36614E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	7.81919E-07	1.64248E-07	3.52854E-07	2.89687E-07		2.80728E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.28152E-06	2.32177E-07	5.08195E-07	3.99341E-07		2.48060E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.02648E-06	1.25572E-06	9.06916E-07	7.76197E-07		3.78602E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	3.42655E-06	2.03562E-06	2.03313E-06	8.74378E-07		9.89176E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.33346E-06	2.74844E-06	3.17332E-06	1.12451E-06		8.68583E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.84601E-05	1.63814E-05	1.29330E-05	9.63339E-07		1.82500E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.15536E-04	9.30351E-05	9.26540E-05	6.15264E-07		3.99853E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	6.61260E-04	5.36308E-04	5.59561E-04	2.44506E-05		1.53690E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.13866E-03	1.73995E-03	1.86749E-03	5.06619E-05		2.72485E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.27953E-02	1.12753E-02	1.19485E-02	7.71483E-05		6.83088E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.99427E-02	4.65662E-02	4.82395E-02	2.10737E-04		1.44131E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	8.98564E-02	8.54598E-02	8.88179E-02	2.45861E-04		1.92352E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.16284E-01	1.12480E-01	1.15970E-01	2.17003E-04		1.05763E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.40378E-01	1.38315E-01	1.40849E-01	1.32486E-04		6.74395E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.58074E-01	1.58406E-01	1.59420E-01	1.65898E-04		1.01614E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.64028E-01	1.67465E-01	1.66194E-01	2.69664E-04		2.83099E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.51050E-01	1.56912E-01	1.52568E-01	2.49628E-04		3.26455E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.14645E-01	1.20728E-01	1.13453E-01	2.24805E-04		2.95630E-04

Table 8.21: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 94.05 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.29616E-06	1.73501E-07	1.02689E-06	9.12635E-07		8.83587E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.65595E-06	3.06265E-07	1.77116E-06	9.72499E-07		1.31130E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.73584E-06	5.10334E-07	2.33297E-06	1.36133E-06		1.02227E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.96610E-06	5.74892E-07	2.92863E-06	5.54249E-07		9.25262E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.04607E-06	9.68409E-07	3.97776E-06	2.78081E-07		8.05948E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	6.95420E-06	4.18037E-06	5.74342E-06	1.37575E-06		5.15429E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	2.32782E-05	1.82158E-05	1.98433E-05	1.69914E-06		1.23084E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.41293E-04	1.03277E-04	1.15698E-04	9.24625E-06		6.61955E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	8.59215E-04	6.97336E-04	7.25848E-04	2.48273E-05		8.88195E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.87925E-03	2.37254E-03	2.50441E-03	4.20682E-05		2.60651E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.82780E-02	1.64700E-02	1.68823E-02	8.93782E-05		5.57450E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.12194E-02	6.66677E-02	6.92552E-02	2.13918E-05		1.00441E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.01311E-01	9.63720E-02	9.99136E-02	8.41591E-05		1.32871E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.20814E-01	1.16973E-01	1.20214E-01	8.56289E-05		7.98226E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.38195E-01	1.36221E-01	1.38545E-01	7.87358E-05		7.55509E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.50204E-01	1.51238E-01	1.51910E-01	1.27369E-04		1.59645E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.52699E-01	1.56676E-01	1.55193E-01	6.65038E-05		1.73969E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.38677E-01	1.45171E-01	1.40780E-01	6.54930E-05		3.09795E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.04682E-01	1.11014E-01	1.03923E-01	1.20735E-04		2.94191E-04

Table 8.22: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 156.75 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00			5.50997E-06			1.84279E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01			7.48461E-06			2.16290E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01			8.65648E-06			2.11104E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01			1.04731E-05			1.53320E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01			1.29346E-05			1.25078E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01			1.93952E-05			8.84984E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01			7.04645E-05			2.05277E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02			4.77530E-04			7.64219E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02			3.07784E-03			2.95986E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02			1.05851E-02			7.87309E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02			4.22361E-02			1.51293E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02			8.46123E-02			1.11033E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02			1.04759E-01			1.04082E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02			1.18806E-01			1.46624E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02			1.31917E-01			2.15882E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02			1.40923E-01			2.95115E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02			1.41730E-01			2.95752E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02			1.27252E-01			2.65042E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02			9.34897E-02			1.79432E-04

Table 8.23: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 365.76 cm

Zone				Mean value			Standard deviation		
No	**lower bound**	**upper bound**	**center**	**Tractebel**	**IRSN**	**AREVA NP**	**Tractebel**	**IRSN**	**AREVA NP**
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.06779E-03	4.90256E-04	7.36189E-04	4.67274E-05		7.39470E-05
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.43060E-03	6.44295E-04	1.02056E-03	6.72049E-05		1.05572E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.65063E-03	7.38141E-04	1.19791E-03	7.55024E-05		1.26675E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.76339E-03	7.69567E-04	1.27842E-03	7.14047E-05		1.22951E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.92164E-03	8.66757E-04	1.39480E-03	7.68094E-05		1.21972E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.11531E-03	1.02945E-03	1.54828E-03	7.90020E-05		1.23262E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	3.17856E-03	1.84958E-03	2.44089E-03	5.63907E-05		1.20923E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	7.13967E-03	4.71946E-03	5.73490E-03	7.20390E-05		1.23495E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.58592E-02	1.13984E-02	1.34205E-02	1.15270E-04		1.52145E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.69614E-02	2.03032E-02	2.34615E-02	2.87068E-04		1.55812E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	5.10449E-02	4.33190E-02	4.71490E-02	2.17130E-04		3.69176E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	8.50231E-02	7.96498E-02	8.29677E-02	1.33131E-04		2.72362E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.01504E-01	9.85562E-02	1.01149E-01	1.98912E-04		4.05374E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.12865E-01	1.12214E-01	1.13889E-01	2.99939E-04		4.13223E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.23233E-01	1.25434E-01	1.25819E-01	2.53768E-04		3.29906E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.30036E-01	1.35362E-01	1.33884E-01	1.44232E-04		1.96839E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.29595E-01	1.38475E-01	1.34247E-01	6.17819E-05		1.10753E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.16472E-01	1.27210E-01	1.20279E-01	1.28289E-04		2.38438E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	8.71396E-02	9.69719E-02	8.83817E-02	8.73812E-05		2.19297E-04

Table 8.24: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 0 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.18530E-02	1.25173E-02	1.11582E-02	2.34303E-04		2.09712E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	2.04607E-02	2.16436E-02	1.93012E-02	3.58857E-04		3.59795E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.96662E-02	3.12061E-02	2.80631E-02	5.37651E-04		5.26316E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.88628E-02	4.05243E-02	3.65922E-02	6.75986E-04		7.18662E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.76691E-02	4.95464E-02	4.48810E-02	8.12336E-04		7.93903E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.60392E-02	5.81323E-02	5.29549E-02	9.86400E-04		9.27832E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.45757E-02	7.65766E-02	7.13124E-02	1.13376E-03		7.57412E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.67946E-02	9.86163E-02	9.40380E-02	1.44239E-03		1.42394E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.06458E-01	1.05871E-01	1.05675E-01	1.05690E-03		2.94941E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.05356E-01	1.03445E-01	1.06212E-01	6.24149E-04		1.42394E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.21203E-02	8.99094E-02	9.43194E-02	6.48432E-04		4.89940E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.01392E-02	6.82329E-02	7.30029E-02	1.30327E-03		6.90743E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	5.96083E-02	5.79129E-02	6.25965E-02	1.23150E-03		3.97840E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.21219E-02	5.06893E-02	5.48653E-02	1.12414E-03		3.20256E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.43395E-02	4.33795E-02	4.65817E-02	1.00897E-03		2.97228E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	3.61707E-02	3.54766E-02	3.79605E-02	8.14783E-04		2.82609E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.77464E-02	2.70315E-02	2.90298E-02	6.98489E-04		2.21321E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.90451E-02	1.85832E-02	1.99406E-02	4.70923E-04		1.97306E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.09738E-02	1.07054E-02	1.15163E-02	2.44146E-04		1.13886E-04

Table 8.25: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 5.22 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.06798E-02	1.04955E-02	1.11762E-02	2.11434E-04		2.14277E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.85219E-02	1.82836E-02	1.93302E-02	3.20050E-04		3.41598E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.69536E-02	2.67489E-02	2.80857E-02	5.06075E-04		4.25348E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.52058E-02	3.53329E-02	3.66533E-02	6.60665E-04		5.48017E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.33266E-02	4.33773E-02	4.50554E-02	7.30863E-04		6.65315E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.10887E-02	5.13416E-02	5.28662E-02	9.17079E-04		7.30888E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.85488E-02	6.92533E-02	7.05075E-02	7.54125E-04		1.03255E-03
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.03209E-02	9.07750E-02	9.18148E-02	6.46522E-04		8.57503E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.01627E-01	1.00855E-01	1.01964E-01	1.13003E-03		3.48126E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.02930E-01	1.01111E-01	1.02339E-01	1.00080E-03		3.28641E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.36536E-02	9.28754E-02	9.18148E-02	1.15579E-03		9.28185E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.41561E-02	7.52381E-02	7.22290E-02	5.15180E-04		8.09809E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.37394E-02	6.48145E-02	6.19800E-02	1.88981E-04		7.75131E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.59570E-02	5.66863E-02	5.44725E-02	7.09684E-05		7.49890E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.76045E-02	4.83081E-02	4.65113E-02	3.99848E-05		6.77849E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	3.89830E-02	3.94926E-02	3.81342E-02	3.35230E-05		6.18842E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	3.01669E-02	3.05763E-02	2.94439E-02	1.03159E-04		5.02805E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.09721E-02	2.10543E-02	2.05005E-02	7.21793E-05		3.84819E-04
1.90000E+01	3.553100E+02	3.605400E+02	3.579250E+02	1.37679E-02	1.37206E-02	1.34866E-02	5.69008E-05		2.60851E-04
2.00000E+01	3.605400E+02	3.657600E+02	3.631500E+02	1.17958E-02	9.65965E-03	1.16347E-02	7.45072E-05		2.01219E-04

Table 8.26: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 10.45 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.11872E-02	1.17454E-02	1.09254E-02	2.63876E-04		1.13934E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.93113E-02	2.02789E-02	1.89427E-02	4.40317E-04		1.73311E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.80407E-02	2.94714E-02	2.75554E-02	6.43807E-04		2.20557E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.64756E-02	3.84372E-02	3.60211E-02	7.94907E-04		2.01682E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.47978E-02	4.68743E-02	4.42385E-02	9.29284E-04		3.05250E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.26302E-02	5.52514E-02	5.20735E-02	9.53211E-04		4.12106E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.01326E-02	7.21708E-02	6.95901E-02	1.06270E-03		7.58941E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.18141E-02	9.36344E-02	9.13952E-02	9.29537E-04		9.12277E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.02695E-01	1.03751E-01	1.03250E-01	9.95850E-04		4.26138E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.03359E-01	1.03520E-01	1.04517E-01	8.19696E-04		2.92134E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.25734E-02	9.00806E-02	9.39030E-02	5.95365E-04		8.86594E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.28881E-02	6.94476E-02	7.37140E-02	6.21034E-04		7.56243E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.29336E-02	6.02365E-02	6.33535E-02	6.29794E-04		7.15262E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.56024E-02	5.37385E-02	5.57795E-02	6.85433E-04		6.49751E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.78665E-02	4.63616E-02	4.78178E-02	6.60602E-04		5.02830E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	3.97552E-02	3.85822E-02	3.94712E-02	6.65098E-04		3.47362E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	3.11936E-02	3.05640E-02	3.09092E-02	5.94016E-04		1.98475E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.21833E-02	2.16864E-02	2.19850E-02	4.59756E-04		8.05439E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.45612E-02	1.41677E-02	1.45579E-02	3.00482E-04		4.32861E-05

Table 8.27: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 15.67 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.03754E-02	1.03720E-02	1.04929E-02	2.62707E-04		2.09913E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.80095E-02	1.78063E-02	1.80978E-02	4.94899E-04		3.67408E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.63939E-02	2.59453E-02	2.63458E-02	7.28982E-04		5.09736E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.44739E-02	3.35238E-02	3.43543E-02	8.81317E-04		6.63704E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.24027E-02	4.08849E-02	4.20668E-02	1.03606E-03		8.10131E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.00342E-02	4.79451E-02	4.94785E-02	1.13332E-03		9.42095E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.68812E-02	6.55128E-02	6.65468E-02	1.46721E-03		1.12492E-03
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	8.75333E-02	8.72258E-02	8.80069E-02	1.42761E-03		9.05758E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	9.85219E-02	9.95825E-02	9.87419E-02	5.39592E-04		4.71636E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.00182E-01	1.01552E-01	9.96956E-02	4.36826E-04		2.77735E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.07365E-02	9.30376E-02	8.98409E-02	9.73898E-04		7.59230E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.16886E-02	7.32862E-02	7.19828E-02	1.08827E-03		1.13079E-03
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.22897E-02	6.32901E-02	6.24705E-02	9.99774E-04		1.18763E-03
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.52866E-02	5.56030E-02	5.54549E-02	9.52948E-04		1.14767E-03
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.78988E-02	4.78724E-02	4.81189E-02	9.86971E-04		1.02334E-03
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	4.02623E-02	4.00865E-02	4.03795E-02	8.68096E-04		8.42861E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	3.23508E-02	3.20620E-02	3.24518E-02	6.93532E-04		6.41415E-04
1.80000E+01	3.448600E+02	3.500900E+02	3.474750E+02	2.57802E-02	2.57323E-02	2.59326E-02	5.27847E-04		5.07737E-04
1.90000E+01	3.500900E+02	3.553100E+02	3.527000E+02	2.31647E-02	2.30417E-02	2.35313E-02	4.67373E-04		4.73862E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.57342E-02	1.56378E-02	1.60095E-02	3.08962E-04		3.28356E-04

Table 8.28: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 20.90 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.03693E-02	9.59936E-03	1.01871E-02	1.95081E-04		1.14810E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.79236E-02	1.67433E-02	1.75395E-02	3.66708E-04		2.36662E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.61356E-02	2.47335E-02	2.56073E-02	6.43984E-04		3.86415E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.41360E-02	3.23801E-02	3.34522E-02	9.40725E-04		5.51694E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.18053E-02	3.92913E-02	4.10545E-02	1.13005E-03		6.42892E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	4.91193E-02	4.61346E-02	4.82452E-02	1.36123E-03		6.21598E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.52126E-02	6.26524E-02	6.45499E-02	1.94220E-03		4.23508E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	8.52566E-02	8.35287E-02	8.47451E-02	1.91337E-03		1.12273E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	9.57709E-02	9.49143E-02	9.58926E-02	6.39480E-04		2.69499E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	9.77038E-02	9.88404E-02	9.80241E-02	4.49664E-04		1.22499E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.05022E-02	9.27180E-02	9.05271E-02	1.13371E-03		2.55786E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.46614E-02	7.67709E-02	7.46757E-02	1.28449E-03		1.84970E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.60406E-02	6.78361E-02	6.62722E-02	1.23208E-03		5.74840E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.95211E-02	6.11945E-02	6.00394E-02	1.05272E-03		6.59921E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	5.26954E-02	5.41852E-02	5.32285E-02	9.69119E-04		7.31325E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	4.54431E-02	4.68738E-02	4.60280E-02	9.15451E-04		7.71366E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	3.76302E-02	3.91872E-02	3.82713E-02	8.14579E-04		7.01925E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	3.07569E-02	3.23526E-02	3.17690E-02	7.27101E-04		6.21602E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.93163E-02	2.00638E-02	1.98915E-02	4.69009E-04		3.74976E-04

Table 8.29: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 26.12 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	9.21884E-03	8.08364E-03	8.91004E-03	2.46642E-04		1.78949E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.59913E-02	1.40309E-02	1.53843E-02	4.28582E-04		3.35605E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.32844E-02	2.03658E-02	2.23000E-02	6.17688E-04		4.81893E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.04152E-02	2.67941E-02	2.90980E-02	7.73972E-04		6.63979E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	3.72309E-02	3.32485E-02	3.56945E-02	9.21054E-04		8.21547E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	4.36198E-02	3.98251E-02	4.20420E-02	1.09923E-03		8.75417E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	5.83377E-02	5.42906E-02	5.63035E-02	1.60933E-03		1.00531E-03
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	7.64793E-02	7.28329E-02	7.46804E-02	1.90584E-03		1.06106E-03
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	8.65026E-02	8.34978E-02	8.52520E-02	1.42600E-03		7.06124E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	8.80625E-02	8.75083E-02	8.81270E-02	1.18087E-03		1.19785E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	8.26795E-02	8.48473E-02	8.36448E-02	7.89972E-04		7.73652E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.12262E-02	7.42723E-02	7.23488E-02	1.12076E-03		1.20234E-03
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.48801E-02	6.75999E-02	6.59741E-02	1.08194E-03		1.25489E-03
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	6.01640E-02	6.31230E-02	6.11818E-02	1.12959E-03		1.15690E-03
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	5.49578E-02	5.85119E-02	5.60477E-02	1.16162E-03		1.09570E-03
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	4.94505E-02	5.31815E-02	5.06260E-02	1.16650E-03		1.08685E-03
1.70000E+01	3.344100E+02	3.396400E+02	3.370250E+02	4.45849E-02	4.79013E-02	4.56436E-02	1.10820E-03		9.51469E-04
1.80000E+01	3.396400E+02	3.448600E+02	3.422500E+02	4.45667E-02	4.76931E-02	4.60782E-02	1.12811E-03		9.92195E-04
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	3.58100E-02	3.83893E-02	3.71274E-02	9.18052E-04		8.23957E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	2.25382E-02	2.40028E-02	2.35360E-02	5.89248E-04		5.17206E-04

Table 8.30: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 31.35 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	7.36889E-03	7.50253E-03	7.15702E-03	2.50314E-04		2.99675E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.27488E-02	1.29732E-02	1.23659E-02	4.02018E-04		5.67202E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.86352E-02	1.87979E-02	1.80395E-02	6.13666E-04		8.09060E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.44058E-02	2.46569E-02	2.36334E-02	8.78489E-04		9.89146E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.99808E-02	3.04117E-02	2.90807E-02	1.09275E-03		1.19487E-03
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	3.54024E-02	3.56356E-02	3.44349E-02	1.31782E-03		1.41834E-03
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	4.78765E-02	4.77567E-02	4.69561E-02	1.46080E-03		1.76693E-03
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	6.52447E-02	6.39532E-02	6.39306E-02	1.36983E-03		2.03138E-03
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	7.73556E-02	7.67088E-02	7.61300E-02	8.86146E-04		1.64692E-03
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	8.31319E-02	8.34235E-02	8.17882E-02	6.89899E-04		7.63181E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	8.42735E-02	8.41411E-02	8.33858E-02	9.93657E-04		8.46673E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.98450E-02	7.97840E-02	7.99243E-02	1.42847E-03		2.51469E-03
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	7.64330E-02	7.62614E-02	7.68622E-02	1.26900E-03		2.84771E-03
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	7.35975E-02	7.36562E-02	7.43327E-02	1.11876E-03		3.11143E-03
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	7.03999E-02	7.03807E-02	7.15147E-02	9.09337E-04		3.11570E-03
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	6.63607E-02	6.62274E-02	6.77892E-02	8.29442E-04		2.95044E-03
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	6.44748E-02	6.46521E-02	6.68950E-02	7.94223E-04		2.86156E-03
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	5.05732E-02	5.09065E-02	5.25077E-02	6.41274E-04		2.21407E-03
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	3.18923E-02	3.21707E-02	3.32722E-02	4.38140E-04		1.35880E-03

Table 8.31: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 36.57 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.58005E-03	3.89242E-03	3.97414E-03	1.53517E-04		1.61565E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	7.87821E-03	6.73280E-03	6.92271E-03	2.80280E-04		2.88440E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.15136E-02	9.75918E-03	1.01629E-02	4.14206E-04		4.15980E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.51768E-02	1.28634E-02	1.33649E-02	5.16016E-04		5.17310E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.87725E-02	1.59854E-02	1.65777E-02	6.45448E-04		6.37731E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.22149E-02	1.88685E-02	1.97451E-02	7.38796E-04		7.32874E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	3.07870E-02	2.57120E-02	2.76417E-02	9.13094E-04		8.66683E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	4.34701E-02	3.67945E-02	4.00436E-02	9.76489E-04		8.82443E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	5.47041E-02	4.86285E-02	5.21069E-02	6.64025E-04		6.47032E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	6.23361E-02	5.67557E-02	6.02347E-02	2.75777E-04		2.46250E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	7.04714E-02	6.72011E-02	6.92271E-02	2.27608E-04		3.17385E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.64710E-02	7.81094E-02	7.72002E-02	6.97965E-04		1.05579E-03
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	7.83014E-02	8.13818E-02	7.97486E-02	5.93127E-04		1.32434E-03
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	7.93304E-02	8.31483E-02	8.11685E-02	5.73068E-04		1.43113E-03
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	8.04561E-02	8.48927E-02	8.25519E-02	6.91406E-04		1.49267E-03
1.60000E+01	3.239600E+02	3.291900E+02	3.265750E+02	7.95201E-02	8.49047E-02	8.21697E-02	7.42974E-04		1.43806E-03
1.70000E+01	3.291900E+02	3.344100E+02	3.318000E+02	8.52672E-02	9.14360E-02	8.93418E-02	6.97016E-04		1.52908E-03
1.80000E+01	3.344100E+02	3.448600E+02	3.396350E+02	7.82355E-02	8.43381E-02	8.21697E-02	6.32752E-04		1.43841E-03
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	6.16071E-02	6.67618E-02	6.47673E-02	4.68704E-04		1.09220E-03
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	3.89067E-02	4.18338E-02	4.08810E-02	3.01352E-04		6.74434E-04

Table 8.32: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 41.80 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	2.58976E-03	2.06608E-03	2.03662E-03	1.79254E-04		8.30478E-05
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	4.48306E-03	3.57545E-03	3.54934E-03	3.11958E-04		1.31361E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	6.55863E-03	5.18687E-03	5.25446E-03	4.30525E-04		1.85931E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	8.64266E-03	6.71171E-03	6.96580E-03	5.38991E-04		2.24180E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.07669E-02	8.27957E-03	8.68390E-03	6.43116E-04		2.51731E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	1.29836E-02	1.00853E-02	1.04902E-02	7.41143E-04		2.91923E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.86122E-02	1.48378E-02	1.54507E-02	8.77335E-04		3.27521E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.83122E-02	2.43669E-02	2.45014E-02	1.02645E-03		3.67476E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	3.94115E-02	3.59314E-02	3.56907E-02	8.47118E-04		4.61595E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	4.90395E-02	4.63174E-02	4.56497E-02	5.38376E-04		4.15318E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	6.50025E-02	6.35464E-02	6.31698E-02	1.49507E-04		1.55718E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	8.48178E-02	8.47178E-02	8.53164E-02	5.97193E-04		2.51327E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	9.40444E-02	9.56360E-02	9.56457E-02	6.81936E-04		6.14405E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.00904E-01	1.03677E-01	1.03293E-01	7.16412E-04		7.79168E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.07366E-01	1.11332E-01	1.10370E-01	8.14476E-04		9.45933E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.18539E-01	1.23468E-01	1.23813E-01	8.46059E-04		1.15146E-03
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.08972E-01	1.14113E-01	1.14176E-01	9.19806E-04		1.06601E-03
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	8.52876E-02	8.97869E-02	8.95727E-02	6.78280E-04		8.31219E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	5.36673E-02	5.63642E-02	5.63701E-02	4.21572E-04		4.82290E-04

Table 8.33: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 52.25 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.73989E-04	4.36487E-04	4.14012E-04	4.81629E-05		2.41200E-05
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	8.32277E-04	7.94621E-04	7.30208E-04	7.23576E-05		4.49679E-05
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.23973E-03	1.17408E-03	1.10701E-03	8.99569E-05		6.51142E-05
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.66840E-03	1.61412E-03	1.52709E-03	1.29493E-04		8.24221E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.12815E-03	2.07494E-03	1.96504E-03	1.60625E-04		9.88044E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.65309E-03	2.57370E-03	2.46676E-03	1.86578E-04		1.10029E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	4.26716E-03	4.14819E-03	4.03873E-03	3.22111E-04		1.49463E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	8.16837E-03	8.09714E-03	7.91507E-03	3.85713E-04		1.39000E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.52703E-02	1.54145E-02	1.49949E-02	3.40348E-04		6.80698E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.39276E-02	2.41042E-02	2.37336E-02	2.37501E-04		5.96617E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	4.60885E-02	4.57723E-02	4.55091E-02	2.50119E-04		8.83566E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	8.29212E-02	8.19821E-02	8.18815E-02	2.77013E-04		2.51593E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.04177E-01	1.03564E-01	1.02987E-01	3.45728E-04		1.26632E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.20242E-01	1.19909E-01	1.19343E-01	3.37195E-04		2.13977E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.44526E-01	1.44462E-01	1.45330E-01	4.92897E-04		3.99392E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.46161E-01	1.46688E-01	1.47538E-01	4.76265E-04		4.99609E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.31590E-01	1.32018E-01	1.32896E-01	4.01931E-04		5.19485E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.00973E-01	1.01921E-01	1.02116E-01	3.51679E-04		3.99656E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	6.26931E-02	6.32513E-02	6.35065E-02	2.10229E-04		2.28290E-04

Table 8.34: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 62.70 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.54302E-04	1.64549E-04	1.47142E-04	1.53426E-05		2.94981E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	2.70983E-04	2.96864E-04	2.71695E-04	2.61774E-05		1.08653E-05
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	4.14950E-04	4.33605E-04	4.12968E-04	3.90810E-05		1.71714E-05
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	5.66655E-04	5.68914E-04	5.69316E-04	5.58836E-05		2.28254E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	7.39968E-04	7.48724E-04	7.42520E-04	6.53527E-05		2.67003E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	9.62245E-04	9.34209E-04	9.55350E-04	8.02469E-05		3.02276E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.73551E-03	1.65382E-03	1.69460E-03	9.92532E-05		1.96652E-05
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	4.09459E-03	3.81273E-03	3.92611E-03	1.70059E-04		1.75814E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	9.27629E-03	8.81115E-03	8.91624E-03	2.04045E-04		8.98188E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.66878E-02	1.60287E-02	1.60133E-02	2.71213E-04		4.11216E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	3.96905E-02	3.88348E-02	3.82889E-02	3.71613E-04		1.44389E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	8.42030E-02	8.40010E-02	8.24765E-02	2.12373E-04		2.89816E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.12100E-01	1.12016E-01	1.10718E-01	2.35135E-04		1.89170E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.41599E-01	1.41637E-01	1.42009E-01	2.19571E-04		8.92909E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.52034E-01	1.52741E-01	1.53011E-01	2.67861E-04		2.14004E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.48211E-01	1.49202E-01	1.49566E-01	3.07242E-04		2.96770E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.29557E-01	1.30230E-01	1.30884E-01	2.70755E-04		3.06603E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	9.76569E-02	9.79734E-02	9.87077E-02	2.17688E-04		2.42056E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	6.00466E-02	5.99111E-02	6.06898E-02	1.60715E-04		1.60539E-04

Table 8.35: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 73.15 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	6.76611E-05	6.76408E-05	7.34789E-05	7.19808E-06		5.17336E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.22374E-04	1.28301E-04	1.33694E-04	1.21384E-05		9.21927E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.89559E-04	1.99773E-04	2.04301E-04	1.81366E-05		1.28709E-05
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.75258E-04	2.83725E-04	2.85621E-04	2.49887E-05		1.52248E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	3.71570E-04	4.12121E-04	3.84118E-04	2.89057E-05		1.75726E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	4.96537E-04	5.34147E-04	5.03039E-04	3.18193E-05		2.26521E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	9.90781E-04	1.05857E-03	9.67742E-04	2.96810E-05		1.81523E-05
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.61950E-03	2.62655E-03	2.49462E-03	2.55056E-05		1.15709E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	6.83036E-03	6.65739E-03	6.40753E-03	1.20519E-04		3.11258E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.37340E-02	1.33525E-02	1.27870E-02	1.58946E-04		3.60649E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	3.81846E-02	3.70180E-02	3.67221E-02	1.49757E-04		3.28004E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	9.10962E-02	8.97856E-02	8.90803E-02	3.35821E-04		1.00846E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.32755E-01	1.31726E-01	1.32225E-01	3.86458E-04		1.57481E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.48553E-01	1.48110E-01	1.48547E-01	1.95192E-04		6.12112E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.52654E-01	1.53046E-01	1.53169E-01	9.40792E-05		5.34295E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.43476E-01	1.44624E-01	1.44700E-01	3.60939E-04		6.12112E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.22099E-01	1.23416E-01	1.23622E-01	3.61184E-04		4.62713E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	9.04417E-02	9.15194E-02	9.17785E-02	2.83778E-04		5.82234E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	5.50433E-02	5.54351E-02	5.59140E-02	1.61340E-04		3.53403E-05

Table 8.36: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution:
Fission densities for CR insertion depth d_{CR} = 94.05 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	3.26785E-05	2.66799E-05	3.03326E-05	5.02832E-06		4.35643E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	6.10491E-05	5.05431E-05	5.44193E-05	8.80477E-06		6.27096E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	9.35180E-05	7.89069E-05	8.69085E-05	1.32399E-05		9.74652E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.34675E-04	1.16715E-04	1.27128E-04	1.51737E-05		9.33750E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.89264E-04	1.77292E-04	1.80315E-04	1.69178E-05		9.63532E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.60827E-04	2.72429E-04	2.52337E-04	2.06486E-05		1.21762E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.02584E-04	6.18325E-04	5.77523E-04	1.40293E-05		1.67703E-05
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.96356E-03	2.02279E-03	1.88157E-03	2.79636E-05		4.91409E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	6.06951E-03	6.14575E-03	5.80324E-03	9.26171E-05		8.20517E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.36353E-02	1.34398E-02	1.30825E-02	1.44603E-04		1.01294E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	4.67529E-02	4.60190E-02	4.54428E-02	1.37962E-04		9.80276E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.24697E-01	1.24358E-01	1.24089E-01	9.61288E-05		1.85255E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.47380E-01	1.47572E-01	1.47420E-01	2.49899E-04		2.70098E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.50908E-01	1.51504E-01	1.51103E-01	2.06109E-04		1.85255E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.45008E-01	1.45467E-01	1.45501E-01	1.46145E-04		7.41019E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.30163E-01	1.30693E-01	1.30853E-01	1.23613E-04		1.22084E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.07401E-01	1.07786E-01	1.08012E-01	1.67672E-04		1.35049E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	7.79091E-02	7.75646E-02	7.84081E-02	1.08334E-04		1.33589E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	4.67400E-02	4.60872E-02	4.70953E-02	1.31820E-04		1.51476E-04

Table 8.37: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 156.75 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00			6.04965E-05			3.38465E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01			1.13105E-04			1.01651E-05
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01			1.76327E-04			1.19600E-05
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01			2.56532E-04			1.54523E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01			3.60614E-04			1.91105E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01			4.98847E-04			1.88435E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01			1.25772E-03			1.52570E-05
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02			4.76876E-03			1.30298E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02			1.82997E-02			3.73187E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02			4.70804E-02			1.81126E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02			1.20560E-01			3.37842E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02			1.50564E-01			1.78222E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02			1.42736E-01			3.19250E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02			1.31900E-01			4.41719E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02			1.17159E-01			4.41719E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02			9.91304E-02			3.88762E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02			7.80190E-02			2.76479E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02			5.48113E-02			2.28182E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02			3.22482E-02			1.44872E-04

Table 8.38: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 365.76 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.18344E-02	1.10680E-02	1.11184E-02	3.26809E-04		2.91760E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	2.03337E-02	1.92358E-02	1.91027E-02	5.36704E-04		5.05473E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.94623E-02	2.79882E-02	2.77656E-02	7.92174E-04		7.35741E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.84776E-02	3.65791E-02	3.62478E-02	9.95134E-04		9.08528E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.71356E-02	4.50940E-02	4.45640E-02	1.10197E-03		1.07653E-03
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.54723E-02	5.29814E-02	5.25581E-02	1.19085E-03		1.21967E-03
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.33833E-02	7.13109E-02	7.07748E-02	1.30934E-03		1.56879E-03
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.45784E-02	9.57858E-02	9.35608E-02	1.36995E-03		1.38317E-03
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.05078E-01	1.09115E-01	1.05570E-01	1.48061E-03		6.95129E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.05492E-01	1.10969E-01	1.06547E-01	1.06663E-03		6.22796E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.27923E-02	9.67474E-02	9.49277E-02	5.92298E-04		1.26928E-03
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.08524E-02	7.18514E-02	7.35843E-02	9.40336E-04		1.83964E-03
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.04232E-02	6.06421E-02	6.27880E-02	9.99897E-04		1.79493E-03
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.30640E-02	5.23992E-02	5.48599E-02	9.71691E-04		1.60618E-03
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.51761E-02	4.44317E-02	4.66877E-02	9.01965E-04		1.26015E-03
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	3.69643E-02	3.61730E-02	3.81517E-02	8.24423E-04		1.00377E-03
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.84390E-02	2.76967E-02	2.93131E-02	7.39454E-04		7.79983E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.96196E-02	1.89890E-02	2.01840E-02	5.36153E-04		4.96049E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.14218E-02	1.09419E-02	1.16945E-02	3.12447E-04		2.83327E-04

Table 8.39: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 0 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	5.57820E-07	6.74507E-08	2.70891E-07	2.88262E-07		6.78525E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	9.18988E-07	6.11262E-08	4.25085E-07	4.92750E-07		1.95092E-08
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	7.98873E-07	1.71125E-07	6.45055E-07	4.12304E-07		3.01050E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	5.71926E-07	6.13498E-08	6.55472E-07	3.24347E-07		3.29360E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	5.32719E-07	2.87167E-07	6.16227E-07	2.64713E-07		2.29994E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.53158E-07	7.45697E-07	8.13657E-07	1.32455E-07		1.65742E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	3.93783E-06	2.96725E-06	2.98102E-06	5.26835E-07		3.09907E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.67609E-05	1.77168E-05	2.04721E-05	2.73278E-06		4.42857E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.80048E-04	1.22787E-04	1.39368E-04	1.11015E-05		2.66778E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	6.48267E-04	4.73562E-04	5.27881E-04	1.72353E-05		1.21855E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	4.92763E-03	3.90870E-03	4.38389E-03	4.99840E-05		1.26279E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	2.24333E-02	1.91726E-02	2.09315E-02	1.03464E-04		2.39537E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	4.17218E-02	3.70110E-02	4.00684E-02	1.20877E-04		5.20113E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	6.36612E-02	5.82287E-02	6.21907E-02	1.39845E-04		3.15697E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	9.51375E-02	8.99067E-02	9.44912E-02	1.25353E-04		1.19322E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.37445E-01	1.33760E-01	1.38306E-01	1.14362E-04		2.38644E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.86212E-01	1.87646E-01	1.89137E-01	6.48845E-05		5.20113E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.25379E-01	2.34366E-01	2.28991E-01	2.40964E-04		1.25714E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	2.22219E-01	2.35381E-01	2.20806E-01	3.11756E-04		3.15697E-05

Table 8.40: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 5.22 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		3.70851E-06	1.35873E-07			1.19775E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.91760E-10	4.98130E-06	1.87899E-07	2.21425E-10		1.84879E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	3.80352E-09	6.35220E-06	2.11580E-07	3.45292E-09		6.58710E-08
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.86672E-08	4.26968E-06	3.42416E-07	2.03306E-08		6.09403E-08
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.01077E-07	2.97772E-06	5.27011E-07	7.18289E-08		1.22148E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.53494E-07	1.13052E-06	6.77073E-07	7.79509E-08		1.21896E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	2.53581E-06	2.13993E-06	2.27799E-06	4.25953E-07		3.68572E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.07990E-05	1.13439E-05	1.60916E-05	1.14634E-06		1.34266E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.43185E-04	8.31054E-05	1.10456E-04	4.61514E-06		4.40193E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	5.11089E-04	3.34030E-04	4.11870E-04	1.26067E-05		4.36293E-06
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	3.81561E-03	3.05331E-03	3.42319E-03	1.42033E-05		6.36083E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.75927E-02	1.51976E-02	1.65485E-02	5.19453E-05		3.81033E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	3.31516E-02	2.96850E-02	3.18457E-02	4.97311E-05		5.90039E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.08022E-02	4.68181E-02	4.96552E-02	7.50293E-05		6.79013E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	7.64876E-02	7.27075E-02	7.59039E-02	8.85631E-05		5.13285E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.11187E-01	1.08955E-01	1.11698E-01	7.58396E-05		1.94004E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.51586E-01	1.52831E-01	1.53641E-01	6.26064E-05		4.22821E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.84645E-01	1.91504E-01	1.87466E-01	8.40410E-05		7.69928E-05
1.90000E+01	3.553100E+02	3.605400E+02	3.579250E+02	1.93444E-01	2.04936E-01	1.91976E-01	1.34312E-04		1.31222E-04
2.00000E+01	3.605400E+02	3.657600E+02	3.631500E+02	1.76611E-01	1.73858E-01	1.77300E-01	1.62061E-04		9.55357E-05

Table 8.41: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 10.45 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	2.27348E-08	1.93184E-10	6.92608E-08	2.62518E-08		9.16695E-09
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	7.18575E-08	4.07165E-10	9.01398E-08	5.20677E-08		6.99809E-09
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.28772E-07	2.27357E-09	1.37503E-07	2.28247E-07		1.85949E-08
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.80917E-07	2.80442E-09	1.86619E-07	4.05378E-07		4.47022E-08
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.31197E-07	1.75406E-08	3.70774E-07	3.60116E-07		8.78803E-08
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	8.46053E-07	6.63676E-08	5.20671E-07	4.95731E-07		7.39247E-08
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	2.86622E-06	1.14850E-06	2.71486E-06	6.58962E-07		6.58862E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.93649E-05	9.41235E-06	1.72933E-05	2.07287E-06		1.87164E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.42574E-04	9.06031E-05	1.15545E-04	4.55920E-06		3.61558E-07
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	5.49095E-04	3.79517E-04	4.50047E-04	8.77295E-06		2.52204E-06
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	4.48730E-03	3.40220E-03	3.96606E-03	2.75558E-05		3.13511E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	2.09533E-02	1.76672E-02	1.95506E-02	9.98322E-05		6.27021E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	3.95741E-02	3.52136E-02	3.79898E-02	1.70715E-04		3.13511E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	6.10455E-02	5.59636E-02	5.95205E-02	2.03346E-04		3.13511E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	9.23268E-02	8.71980E-02	9.14551E-02	1.92644E-04		3.13511E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.34978E-01	1.31751E-01	1.35571E-01	1.13868E-04		7.77029E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.85370E-01	1.87070E-01	1.87923E-01	1.75908E-04		5.16511E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.27642E-01	2.36120E-01	2.30723E-01	3.03166E-04		6.59757E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	2.32908E-01	2.45134E-01	2.32714E-01	2.28098E-04		1.03302E-04

Table 8.42: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 15.67 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	5.75325E-08	2.05436E-11	1.90992E-07	6.64328E-08		8.98241E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	7.84732E-08	2.25191E-10	2.14055E-07	8.51370E-08		1.05915E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.70185E-07	2.76914E-09	2.06985E-07	1.61677E-07		9.99848E-08
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.72448E-07	2.17799E-10	2.54228E-07	2.76309E-07		1.40932E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.27449E-07	2.29396E-10	3.04055E-07	2.38575E-07		1.79904E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.51014E-07	1.77633E-08	4.32901E-07	1.68452E-07		2.39339E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.99383E-07	6.72338E-07	1.24230E-06	1.88904E-07		3.83243E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	8.90205E-06	8.22910E-06	7.84761E-06	1.00188E-06		5.05833E-08
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	7.97639E-05	6.12842E-05	6.32059E-05	3.36684E-06		1.21712E-07
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	3.20675E-04	2.42142E-04	2.57880E-04	7.43057E-06		8.18934E-07
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.88747E-03	2.35722E-03	2.56653E-03	2.14838E-05		2.52439E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.44959E-02	1.26922E-02	1.35297E-02	2.90327E-05		2.76629E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	2.84912E-02	2.58835E-02	2.71689E-02	6.48239E-05		4.14070E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	4.51077E-02	4.20962E-02	4.37227E-02	1.18535E-04		2.47707E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	7.01025E-02	6.72894E-02	6.90481E-02	1.44614E-04		2.47707E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.05519E-01	1.03873E-01	1.05197E-01	1.56044E-04		9.36246E-06
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.49440E-01	1.51870E-01	1.50455E-01	5.28696E-05		2.47707E-05
1.80000E+01	3.448600E+02	3.500900E+02	3.474750E+02	1.86341E-01	1.93852E-01	1.87193E-01	1.12440E-04		8.16200E-05
1.90000E+01	3.500900E+02	3.553100E+02	3.527000E+02	2.04733E-01	2.14614E-01	2.09345E-01	2.00648E-04		7.66350E-05
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.92471E-01	1.85161E-01	1.91444E-01	2.15218E-04		1.06337E-04

Table 8.43: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 20.90 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.36361E-07	5.98434E-12	7.33248E-09	1.57456E-07		2.65140E-09
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	6.09980E-08	2.04681E-11	1.58004E-08	7.04344E-08		3.53448E-09
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.19660E-08	1.76291E-09	2.51386E-08	1.38171E-08		4.66144E-09
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	9.91860E-08	1.02056E-08	4.73470E-08	1.14530E-07		2.07409E-08
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.96525E-07	7.18984E-09	9.56992E-08	2.23425E-07		3.47472E-08
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.30743E-07	7.58588E-09	1.83583E-07	2.65575E-07		4.13796E-08
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	9.45464E-07	7.77015E-07	6.77687E-07	4.97161E-07		6.46522E-08
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.14334E-06	5.83007E-06	6.11174E-06	1.68410E-06		2.33534E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	7.05502E-05	4.78872E-05	5.51117E-05	5.74250E-06		2.01974E-07
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.92745E-04	2.03674E-04	2.39283E-04	6.09108E-06		3.13363E-07
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.98579E-03	2.33815E-03	2.63916E-03	1.58170E-05		2.71074E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.59569E-02	1.37673E-02	1.48978E-02	3.51248E-05		7.19876E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	3.22816E-02	2.89211E-02	3.09103E-02	1.02432E-04		1.35904E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.22503E-02	4.83077E-02	5.08697E-02	1.44575E-04		0.00000E+00
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	8.34052E-02	7.91896E-02	8.22930E-02	1.77562E-04		2.30545E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.28872E-01	1.25317E-01	1.28748E-01	1.07684E-04		1.99658E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.86238E-01	1.86510E-01	1.87859E-01	4.82689E-05		1.15272E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.56490E-01	2.63393E-01	2.61565E-01	1.91439E-04		3.04982E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	2.41147E-01	2.51998E-01	2.39917E-01	3.01633E-04		2.30545E-05

Table 8.44: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 26.12 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		2.83964E-09	4.39626E-09			2.40312E-09
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		1.09700E-08	7.84456E-09			1.73684E-09
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		3.73583E-08	1.06534E-08			3.31549E-09
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	5.70951E-10	2.33972E-08	1.37923E-08	4.82484E-10		1.25082E-09
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	6.82523E-08	3.08255E-08	2.65849E-08	3.23019E-08		3.41434E-09
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	1.49599E-07	1.68827E-07	5.11495E-08	7.56666E-08		3.19034E-09
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	4.44509E-07	3.86921E-07	2.80657E-07	1.16510E-07		2.23402E-08
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	4.13646E-06	2.98378E-06	3.01728E-06	8.61123E-07		4.50469E-08
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	3.99170E-05	3.22419E-05	3.02106E-05	3.42760E-06		3.77278E-08
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.75848E-04	1.36118E-04	1.40791E-04	7.96443E-06		2.25382E-07
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.02949E-03	1.66223E-03	1.79632E-03	2.32320E-05		1.63638E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.17145E-02	1.02563E-02	1.09401E-02	3.03668E-05		1.88639E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	2.46554E-02	2.26213E-02	2.35582E-02	2.58483E-05		6.80148E-06
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	4.10456E-02	3.86373E-02	3.98877E-02	3.64475E-05		9.43196E-06
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	6.73499E-02	6.52214E-02	6.64198E-02	1.14196E-04		9.43196E-06
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.07454E-01	1.06764E-01	1.07156E-01	5.87329E-05		0.00000E+00
1.70000E+01	3.344100E+02	3.396400E+02	3.370250E+02	1.46087E-01	1.48429E-01	1.46346E-01	6.61900E-05		1.63366E-05
1.80000E+01	3.396400E+02	3.448600E+02	3.422500E+02	1.90494E-01	1.95189E-01	1.93808E-01	8.47624E-05		9.43196E-06
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.12237E-01	2.22035E-01	2.15407E-01	7.87746E-05		9.43196E-06
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.96713E-01	1.89012E-01	1.94506E-01	6.05145E-05		3.26733E-05

Table 8.45: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 31.35 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		6.79748E-14	8.13145E-08			4.47299E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		2.51978E-13	1.03716E-07			6.03001E-08
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		1.49628E-12	8.97494E-08			7.24678E-08
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.09645E-08	4.45364E-09	8.55924E-08	1.26607E-08		7.13477E-08
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.36015E-08	3.39822E-08	6.27306E-08	1.56031E-08		4.08199E-08
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	6.01740E-08	3.06603E-08	6.75332E-08	2.89923E-08		2.72185E-08
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	4.05287E-07	2.63411E-07	2.54330E-07	1.74502E-07		4.57974E-08
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	3.55387E-06	3.60047E-06	2.52394E-06	8.00953E-07		1.42693E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	3.42882E-05	2.44077E-05	2.78703E-05	2.69638E-06		5.25279E-07
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.64070E-04	1.25802E-04	1.37011E-04	4.20978E-06		1.78270E-06
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.14547E-03	1.76103E-03	1.92936E-03	1.04034E-05		4.35954E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.31897E-02	1.14861E-02	1.23980E-02	5.36642E-05		8.78851E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	2.85905E-02	2.56502E-02	2.74415E-02	8.30407E-05		1.94900E-06
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	4.86650E-02	4.49834E-02	4.74182E-02	1.00239E-04		1.12525E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	8.16706E-02	7.76654E-02	8.07144E-02	1.11208E-04		1.94900E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.31269E-01	1.28591E-01	1.31238E-01	1.09051E-04		2.25051E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.16046E-01	2.16132E-01	2.19323E-01	1.21059E-04		1.94900E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.50637E-01	2.56890E-01	2.54397E-01	2.14862E-04		3.89799E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	2.27585E-01	2.36687E-01	2.24972E-01	1.65598E-04		1.12525E-05

Table 8.46: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 36.57 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		1.53877E-10	1.51418E-08			1.31861E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		1.21121E-10	2.12755E-08			1.17218E-08
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		3.31326E-10	1.14117E-08			6.03620E-09
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01		4.26435E-10	1.07011E-08			4.94426E-09
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	5.15040E-09	5.81718E-09	1.49532E-08	5.94717E-09		4.05571E-09
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	1.03882E-08	4.15615E-09	2.76235E-08	1.19952E-08		3.45351E-09
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	2.96692E-07	9.75799E-08	1.72206E-07	4.00862E-08		1.11000E-08
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.70292E-06	1.79889E-06	1.83256E-06	2.28893E-07		3.40651E-08
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	2.55976E-05	1.90449E-05	2.02733E-05	1.82007E-06		6.36632E-08
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.21350E-04	8.40029E-05	1.02095E-04	5.00821E-06		2.76770E-07
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.74793E-03	1.46040E-03	1.57132E-03	1.18550E-05		2.67397E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.12719E-02	1.01730E-02	1.06119E-02	1.78307E-05		2.57133E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	2.50484E-02	2.31417E-02	2.40713E-02	1.27346E-05		5.05000E-06
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	4.34038E-02	4.11886E-02	4.23542E-02	3.19217E-05		9.71872E-06
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	7.41786E-02	7.25135E-02	7.34055E-02	5.67554E-05		1.94374E-05
1.60000E+01	3.239600E+02	3.291900E+02	3.265750E+02	1.06384E-01	1.06346E-01	1.05973E-01	9.36855E-05		1.94374E-05
1.70000E+01	3.291900E+02	3.344100E+02	3.318000E+02	1.51572E-01	1.52266E-01	1.53080E-01	8.71644E-05		9.71872E-06
1.80000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.87150E-01	1.91727E-01	1.89690E-01	5.88605E-05		1.74629E-17
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.10985E-01	2.20680E-01	2.13530E-01	3.01588E-05		2.57133E-05
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.88108E-01	1.80399E-01	1.85589E-01	1.12610E-04		9.71872E-06

Table 8.47: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 41.80 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		1.34441E-11	7.89790E-10			7.82607E-10
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		8.42750E-12	2.68642E-09			2.64458E-09
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		5.65761E-11	5.89123E-09			4.76942E-09
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01		5.39002E-09	7.67252E-09			5.86563E-09
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01		1.33357E-08	1.01340E-08			5.18844E-09
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	9.38265E-11	2.37813E-08	1.54299E-08	1.08342E-10		3.83165E-09
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.05936E-07	1.93815E-07	1.22782E-07	6.75916E-08		1.29776E-08
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.41582E-06	9.74811E-07	1.72685E-06	6.33637E-07		4.74487E-08
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	2.79855E-05	1.35761E-05	2.08780E-05	9.39187E-07		8.11218E-08
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.28990E-04	8.58519E-05	1.08973E-04	3.81052E-06		2.50394E-07
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.98449E-03	1.63153E-03	1.79651E-03	2.72602E-05		9.09348E-07
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.32734E-02	1.16924E-02	1.25303E-02	6.43524E-05		4.84250E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	2.98677E-02	2.73223E-02	2.88957E-02	6.22528E-05		1.07136E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.25153E-02	4.92356E-02	5.15145E-02	5.18691E-05		1.11094E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	8.94838E-02	8.60862E-02	8.88312E-02	1.04152E-04		1.11094E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.62707E-01	1.59425E-01	1.63864E-01	9.60712E-05		1.11094E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.12417E-01	2.12790E-01	2.15179E-01	8.41335E-05		1.11094E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.32641E-01	2.38281E-01	2.35365E-01	1.32954E-04		1.92421E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	2.04951E-01	2.13436E-01	2.01892E-01	2.00446E-04		2.22189E-05

Table 8.48: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 52.25 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		5.31449E-15	2.75131E-09			1.14482E-09
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		1.74120E-14	1.38669E-09			1.29925E-09
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		1.22088E-12	1.66452E-09			8.14771E-10
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01		2.00355E-12	4.29294E-09			4.81257E-10
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01		9.96803E-12	7.62353E-09			1.09585E-09
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	9.93968E-11	3.30108E-10	1.42449E-08	1.14773E-10		1.20966E-09
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.08028E-07	4.87380E-08	1.16609E-07	5.73140E-08		1.18924E-09
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.68848E-06	9.72622E-07	1.64185E-06	2.78383E-07		2.53885E-08
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	2.41998E-05	1.76216E-05	2.04802E-05	1.78354E-06		1.57807E-07
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.30869E-04	9.36926E-05	1.10913E-04	3.41227E-06		4.76027E-07
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.15922E-03	1.81453E-03	1.99526E-03	1.23534E-05		1.08942E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.51998E-02	1.36281E-02	1.45557E-02	4.15173E-05		3.98825E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	3.53518E-02	3.27756E-02	3.43789E-02	7.18968E-05		0.00000E+00
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	6.21876E-02	5.88834E-02	6.11365E-02	4.66185E-05		1.10614E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.19520E-01	1.15235E-01	1.19231E-01	6.58962E-05		9.93773E-18
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.66030E-01	1.63409E-01	1.67050E-01	4.66414E-05		0.00000E+00
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.02134E-01	2.02968E-01	2.04636E-01	4.87838E-05		1.10614E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.13002E-01	2.18984E-01	2.15388E-01	5.04480E-05		2.21228E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.84259E-01	1.92190E-01	1.81496E-01	9.98080E-05		1.10614E-05

Table 8.49: Results from the contributors for the 50 MWd/kg U axial burn-up profile:
Fission densities for CR insertion depth d_{CR} = 62.70 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		4.31626E-10	2.11507E-09			8.73258E-10
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		8.23747E-10	2.26410E-09			1.11459E-09
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		3.35973E-09	3.56263E-09			1.80043E-09
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01		2.70592E-08	5.64451E-09			2.42240E-09
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01		2.55643E-07	7.95380E-09			3.40495E-09
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01		2.17430E-07	1.60455E-08			3.76769E-09
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.24341E-07	3.09651E-07	1.22918E-07	2.80180E-08		5.15336E-09
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.02539E-06	2.63802E-06	1.72945E-06	2.40720E-07		1.71609E-08
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	2.88860E-05	2.01463E-05	2.33434E-05	9.62470E-07		3.55510E-08
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.54065E-04	1.10676E-04	1.30487E-04	2.98274E-06		1.56340E-07
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.67974E-03	2.26533E-03	2.46833E-03	7.55031E-06		3.32480E-07
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.93249E-02	1.73406E-02	1.84781E-02	4.08971E-05		4.43306E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	4.44917E-02	4.13069E-02	4.33110E-02	8.20801E-05		1.10827E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	8.79638E-02	8.32184E-02	8.70321E-02	1.45831E-04		1.10827E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.26499E-01	1.22281E-01	1.26364E-01	1.05535E-04		1.10827E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.63207E-01	1.60966E-01	1.64367E-01	6.85671E-05		1.10827E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.90631E-01	1.92182E-01	1.93027E-01	5.22140E-05		1.10827E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.96602E-01	2.03142E-01	1.98889E-01	1.51825E-04		1.91957E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.68417E-01	1.77163E-01	1.65907E-01	2.39780E-04		1.91957E-05

Table 8.50: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 73.15 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		1.08252E-13	1.35463E-08			2.18090E-09
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		1.62136E-13	1.27917E-08			2.44842E-09
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		1.77570E-12	1.09266E-08			3.42184E-09
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01		1.80773E-12	1.19914E-08			1.67653E-09
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01		6.79148E-11	1.63937E-08			2.19227E-09
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	3.45955E-09	4.37983E-10	2.13207E-08	3.99474E-09		1.48751E-09
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.60483E-07	1.20236E-07	1.53400E-07	6.87472E-08		5.93201E-09
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.95513E-06	1.06625E-06	2.18475E-06	1.95240E-07		3.25680E-08
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	3.85546E-05	2.40827E-05	2.95929E-05	1.07594E-06		6.81161E-08
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.02279E-04	1.51841E-04	1.66795E-04	4.32716E-06		3.34862E-08
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	3.54164E-03	3.01719E-03	3.25743E-03	2.23184E-05		6.21478E-07
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	2.55860E-02	2.30592E-02	2.44271E-02	6.28106E-05		2.23242E-06
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.59443E-02	6.11966E-02	6.43494E-02	1.36091E-04		1.11621E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	9.66288E-02	9.16257E-02	9.52795E-02	4.66959E-05		1.11621E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.28614E-01	1.24385E-01	1.28163E-01	1.07864E-04		1.11621E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.58673E-01	1.56866E-01	1.59685E-01	1.88224E-04		1.11621E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.80775E-01	1.83047E-01	1.83315E-01	1.43638E-04		1.11621E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.83796E-01	1.91160E-01	1.86585E-01	1.13379E-04		0.00000E+00
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.56198E-01	1.65466E-01	1.54740E-01	2.00170E-04		0.00000E+00

Table 8.51: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 94.05 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00		8.47386E-11	3.51298E-08			3.19765E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01		7.55114E-10	4.53036E-08			3.82226E-08
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01		1.84819E-09	4.05927E-08			2.45778E-08
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.36245E-09	1.31462E-09	5.18868E-08	3.88262E-09		3.29970E-08
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.55788E-08	6.45837E-10	7.14126E-08	2.00703E-08		4.76792E-08
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	4.71035E-08	1.03358E-09	8.36557E-08	2.00992E-08		4.04973E-08
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.18333E-07	1.10690E-07	4.10256E-07	2.90208E-07		1.16220E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	5.41383E-06	3.32520E-06	4.38191E-06	6.07515E-07		2.93824E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	6.88769E-05	4.62717E-05	5.58589E-05	2.32512E-06		1.19963E-07
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	3.72978E-04	2.65967E-04	3.17942E-04	2.70343E-06		1.04064E-06
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	6.84925E-03	5.84813E-03	6.36162E-03	1.11906E-05		1.56157E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.86519E-02	4.36725E-02	4.66703E-02	1.17754E-04		7.56957E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	7.94260E-02	7.32872E-02	7.74337E-02	9.03741E-05		1.03891E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.02845E-01	9.74008E-02	1.01444E-01	1.10562E-04		8.08044E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.27727E-01	1.24147E-01	1.27440E-01	1.29502E-04		1.99939E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.51592E-01	1.51236E-01	1.52882E-01	5.76146E-06		8.32413E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.69049E-01	1.73209E-01	1.71848E-01	1.19809E-04		1.26978E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.69845E-01	1.78115E-01	1.72956E-01	8.48581E-05		1.10118E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.43567E-01	1.52768E-01	1.42585E-01	1.73208E-04		1.44639E-04

Table 8.52: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 156.75 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00			2.14769E-07			1.44288E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01			1.10544E-07			4.15715E-08
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01			8.56776E-08			2.65180E-08
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01			1.33577E-07			1.74076E-08
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01			1.95827E-07			1.86897E-08
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01			3.51850E-07			3.61096E-08
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01			2.58581E-06			7.10345E-08
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02			3.92888E-05			3.23650E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02			5.56791E-04			2.33143E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02			3.15494E-03			2.79465E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02			2.28746E-02			1.07637E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02			5.89143E-02			1.13297E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02			8.22913E-02			5.76879E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02			1.01942E-01			4.53886E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02			1.24136E-01			4.36080E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02			1.46291E-01			1.76239E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02			1.62808E-01			2.83452E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02			1.62933E-01			3.15468E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02			1.34055E-01			3.27302E-04

Table 8.53: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities for CR insertion depth d_{CR} = 365.76 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	3.54041E-04	1.76462E-04	1.54567E-04	2.74066E-05		2.42861E-05
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	4.29991E-04	2.12874E-04	1.93258E-04	2.84466E-05		2.59832E-05
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	4.47767E-04	2.26347E-04	2.08381E-04	3.16612E-05		2.52997E-05
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	4.37706E-04	2.24148E-04	2.11144E-04	2.59379E-05		2.15243E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.50557E-04	2.43738E-04	2.24425E-04	2.46883E-05		1.44976E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	4.87504E-04	2.86671E-04	2.60742E-04	2.57358E-05		1.39404E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.86706E-04	4.52748E-04	4.81588E-04	4.08162E-05		1.79727E-05
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.09958E-03	1.31092E-03	1.43076E-03	8.61168E-05		1.14264E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	5.71618E-03	3.88376E-03	4.31912E-03	1.35789E-04		1.57257E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.13597E-02	8.15373E-03	9.18428E-03	2.02372E-04		2.01353E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.88065E-02	2.30027E-02	2.54348E-02	3.98723E-04		1.41448E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	6.24475E-02	5.50578E-02	5.89631E-02	3.34251E-04		2.68018E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	8.39990E-02	7.76835E-02	8.15314E-02	2.13271E-04		2.30565E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.01759E-01	9.72424E-02	1.00689E-01	1.70078E-04		1.91065E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.21518E-01	1.19610E-01	1.22336E-01	2.20103E-04		8.09996E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.40677E-01	1.42774E-01	1.43919E-01	2.38310E-04		2.63269E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.54528E-01	1.61471E-01	1.59665E-01	3.83400E-04		4.63859E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.54049E-01	1.65566E-01	1.59587E-01	3.56960E-04		5.34623E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.29647E-01	1.42422E-01	1.31208E-01	3.43539E-04		4.20886E-04

Table 8.54: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 0 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.10409E-02	1.04830E-02	1.23794E-02	1.54482E-04		1.58723E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.90461E-02	1.84547E-02	2.04901E-02	3.10668E-04		2.39467E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.76143E-02	2.66601E-02	2.93492E-02	4.17452E-04		3.46925E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.60859E-02	3.49935E-02	3.78868E-02	5.33972E-04		3.74351E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.41845E-02	4.29109E-02	4.60705E-02	4.88174E-04		4.06694E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.19969E-02	5.07819E-02	5.39385E-02	5.71063E-04		5.21645E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.97690E-02	6.78398E-02	7.12358E-02	6.72269E-04		5.87912E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.22588E-02	8.82516E-02	9.28019E-02	9.25132E-04		4.83093E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.04778E-01	9.99438E-02	1.03620E-01	9.92082E-04		2.33905E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.05818E-01	1.03231E-01	1.03854E-01	1.00004E-03		5.06419E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.47279E-02	9.55240E-02	9.26557E-02	3.33022E-04		2.04667E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.42887E-02	7.76173E-02	7.22299E-02	8.02954E-04		6.39981E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.37576E-02	6.74766E-02	6.18738E-02	1.02748E-03		7.98458E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.59596E-02	5.92315E-02	5.43537E-02	1.03354E-03		8.05610E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.76453E-02	5.00067E-02	4.64302E-02	8.97611E-04		7.03729E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	3.89119E-02	4.07711E-02	3.81558E-02	8.60133E-04		5.90820E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.97837E-02	3.15226E-02	2.95598E-02	7.05199E-04		4.64914E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.05300E-02	2.18232E-02	2.06451E-02	5.16008E-04		3.33481E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.18040E-02	1.24767E-02	1.24701E-02	2.97426E-04		2.13679E-04

Table 8.55: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 5.22 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.17189E-02	1.06232E-02	1.10095E-02	4.60145E-04		1.74669E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	2.02415E-02	1.84650E-02	1.90304E-02	8.33538E-04		2.68080E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.92871E-02	2.67709E-02	2.76737E-02	1.32497E-03		2.98278E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.80787E-02	3.45612E-02	3.61412E-02	1.69944E-03		3.47610E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.64811E-02	4.21802E-02	4.43580E-02	1.87021E-03		3.94371E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.44220E-02	4.96536E-02	5.21886E-02	2.07541E-03		4.05821E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.19770E-02	6.65447E-02	6.93341E-02	2.06587E-03		3.42919E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.28266E-02	8.76756E-02	9.06413E-02	1.36501E-03		7.06550E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.02283E-01	9.85312E-02	1.01536E-01	9.16085E-04		8.29818E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.01728E-01	1.01993E-01	1.02948E-01	1.24740E-03		7.92964E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	8.98215E-02	9.44688E-02	9.24858E-02	1.62637E-03		1.25627E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	6.96523E-02	7.61261E-02	7.17839E-02	1.65510E-03		7.47859E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	5.95942E-02	6.57866E-02	6.16534E-02	1.53422E-03		9.07021E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.24637E-02	5.79338E-02	5.43387E-02	1.44057E-03		9.19599E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.49310E-02	4.93998E-02	4.66147E-02	1.32260E-03		8.43637E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	3.70936E-02	4.04613E-02	3.85074E-02	1.08632E-03		7.71961E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.90895E-02	3.13768E-02	3.00860E-02	8.48778E-04		6.46588E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.08083E-02	2.22896E-02	2.13562E-02	6.63188E-04		4.56889E-04
1.90000E+01	3.553100E+02	3.605400E+02	3.579250E+02	1.40494E-02	1.49693E-02	1.43816E-02	4.69737E-04		2.98528E-04
2.00000E+01	3.605400E+02	3.657600E+02	3.631500E+02	1.34537E-02	1.01895E-02	1.39320E-02	4.71850E-04		2.64257E-04

Table 8.56: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 10.45 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.11670E-02	1.04763E-02	1.05165E-02	2.78292E-04		1.63816E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.93247E-02	1.84460E-02	1.81730E-02	4.30410E-04		3.04282E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.79513E-02	2.67835E-02	2.64520E-02	6.37033E-04		4.29161E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.63534E-02	3.50025E-02	3.44986E-02	7.89504E-04		4.21733E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.45709E-02	4.28916E-02	4.23100E-02	9.06610E-04		4.34875E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.25227E-02	5.05035E-02	4.98173E-02	9.35221E-04		4.24359E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.97616E-02	6.79127E-02	6.67051E-02	1.03275E-03		3.36552E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.02613E-02	8.86202E-02	8.78386E-02	5.67389E-04		3.48988E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.00360E-01	1.00616E-01	9.94567E-02	5.21981E-04		3.30831E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.00820E-01	1.01614E-01	1.00977E-01	6.77098E-04		2.54973E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.00056E-02	9.05158E-02	9.17973E-02	7.26160E-04		4.22581E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.13541E-02	7.21691E-02	7.41378E-02	8.39806E-04		6.30089E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.21315E-02	6.37445E-02	6.46454E-02	6.96145E-04		4.69963E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.56039E-02	5.72599E-02	5.78208E-02	7.07054E-04		4.85314E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.85506E-02	5.02411E-02	5.04742E-02	6.31889E-04		3.75949E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	4.11317E-02	4.26800E-02	4.28149E-02	5.60296E-04		2.99896E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	3.34098E-02	3.46224E-02	3.47797E-02	4.90243E-04		2.40164E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.52094E-02	2.59325E-02	2.61995E-02	4.07615E-04		2.36226E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.95105E-02	1.99685E-02	2.05856E-02	3.12885E-04		1.87036E-04

Table 8.57: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 15.67 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	8.93629E-03	9.00005E-03	8.84072E-03	5.92597E-04		3.93270E-05
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.54326E-02	1.57471E-02	1.53323E-02	1.02068E-03		8.87936E-05
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.24394E-02	2.31124E-02	2.22617E-02	1.45402E-03		1.54419E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.93277E-02	3.00531E-02	2.90548E-02	1.81834E-03		2.91055E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	3.59928E-02	3.66972E-02	3.56198E-02	2.07432E-03		3.86776E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	4.24804E-02	4.31514E-02	4.19672E-02	2.27803E-03		4.73154E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	5.72959E-02	5.79388E-02	5.64605E-02	2.70021E-03		5.60330E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	7.63766E-02	7.49945E-02	7.49285E-02	2.27387E-03		7.82128E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	8.71167E-02	8.37921E-02	8.56805E-02	1.19629E-03		7.65728E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	8.96071E-02	8.63276E-02	8.88004E-02	5.25311E-04		6.87192E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	8.45360E-02	8.30011E-02	8.37928E-02	1.03952E-03		4.48014E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.19095E-02	7.16989E-02	7.17115E-02	1.49609E-03		7.45713E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.50389E-02	6.54494E-02	6.54638E-02	1.68924E-03		8.22189E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	6.00738E-02	6.06932E-02	6.06816E-02	1.76648E-03		8.05670E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	5.48632E-02	5.54555E-02	5.54721E-02	1.75443E-03		7.40746E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	4.92174E-02	5.00643E-02	5.00738E-02	1.75770E-03		6.44969E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	4.32435E-02	4.41434E-02	4.41879E-02	1.73505E-03		5.72736E-04
1.80000E+01	3.448600E+02	3.500900E+02	3.474750E+02	3.75713E-02	3.86205E-02	3.85457E-02	1.57789E-03		5.05376E-04
1.90000E+01	3.500900E+02	3.553100E+02	3.527000E+02	3.97084E-02	4.06480E-02	4.11335E-02	1.70450E-03		5.16675E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	2.88327E-02	2.94117E-02	2.99908E-02	1.30855E-03		3.51664E-04

Table 8.58: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 20.90 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.99061E-03	4.25606E-03	4.12304E-03	2.76362E-04		1.53244E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	8.65211E-03	7.43312E-03	7.16368E-03	4.57075E-04		2.54029E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.26429E-02	1.08177E-02	1.05075E-02	6.37644E-04		3.81843E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.65340E-02	1.43386E-02	1.38647E-02	8.85992E-04		4.74580E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.02874E-02	1.76214E-02	1.72310E-02	1.12112E-03		5.83990E-04
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.40130E-02	2.09219E-02	2.05074E-02	1.38364E-03		7.27253E-04
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	3.27825E-02	2.89040E-02	2.88950E-02	1.80738E-03		8.93417E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	4.55821E-02	4.19931E-02	4.18413E-02	1.92792E-03		8.22212E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	5.73065E-02	5.48330E-02	5.39926E-02	1.68258E-03		6.36071E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	6.55039E-02	6.35311E-02	6.24947E-02	1.34864E-03		5.97347E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	7.40010E-02	7.18077E-02	7.24228E-02	6.96202E-04		1.94480E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	8.00808E-02	7.91445E-02	8.05970E-02	7.21335E-04		7.62535E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	8.15089E-02	8.20541E-02	8.28427E-02	1.07110E-03		1.20912E-03
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	8.20643E-02	8.35866E-02	8.42574E-02	1.40129E-03		1.53644E-03
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	8.22827E-02	8.52520E-02	8.57171E-02	1.60074E-03		1.81288E-03
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	8.23861E-02	8.69876E-02	8.67950E-02	1.79826E-03		1.89050E-03
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	8.11847E-02	8.70194E-02	8.64133E-02	1.91713E-03		1.97580E-03
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	8.70315E-02	9.37238E-02	9.38913E-02	2.09347E-03		2.24668E-03
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	6.11651E-02	6.57743E-02	6.64425E-02	1.56070E-03		1.59536E-03

Table 8.59: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 26.12 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	5.57093E-04	3.48794E-04	3.92982E-04	3.23067E-05		2.40098E-05
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	9.65520E-04	6.21770E-04	6.91183E-04	5.54388E-05		3.81002E-05
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.43016E-03	9.09199E-04	1.02683E-03	8.76274E-05		5.72434E-05
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.91969E-03	1.20137E-03	1.37847E-03	1.18517E-04		7.00654E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.43199E-03	1.54443E-03	1.76990E-03	1.45565E-04		8.80850E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.96327E-03	1.88040E-03	2.17495E-03	1.43867E-04		9.70763E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	4.60619E-03	3.06033E-03	3.54271E-03	1.88244E-04		1.22986E-04
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	8.26091E-03	5.75700E-03	6.64893E-03	2.95718E-04		1.28898E-04
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.41141E-02	1.08319E-02	1.19472E-02	3.62239E-04		1.35691E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.08931E-02	1.72491E-02	1.80676E-02	3.21312E-04		1.48211E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	3.63840E-02	3.21018E-02	3.29985E-02	2.83778E-04		2.21355E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	6.01640E-02	5.68592E-02	5.75313E-02	1.98603E-04		2.65384E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	7.32250E-02	7.12964E-02	7.14969E-02	1.42843E-04		1.36997E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	8.35581E-02	8.27195E-02	8.26804E-02	7.28040E-05		7.36043E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	9.52820E-02	9.62838E-02	9.56723E-02	1.55691E-04		7.36043E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.08932E-01	1.11659E-01	1.10612E-01	2.07618E-04		2.57615E-04
1.70000E+01	3.344100E+02	3.396400E+02	3.370250E+02	1.16791E-01	1.21325E-01	1.19542E-01	3.46410E-04		3.60854E-04
1.80000E+01	3.396400E+02	3.448600E+02	3.422500E+02	1.44237E-01	1.50227E-01	1.49211E-01	4.75928E-04		5.38908E-04
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.31082E-01	1.37790E-01	1.36345E-01	5.22247E-04		5.55874E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	9.22035E-02	9.63343E-02	9.62704E-02	2.57004E-04		3.87735E-04

Table 8.60: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 31.35 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	5.19628E-05	5.78626E-05	4.51354E-05	2.04806E-06		1.18621E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	9.41499E-05	9.87254E-05	8.05662E-05	3.80947E-06		2.98457E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.45893E-04	1.47928E-04	1.21689E-04	3.62108E-06		6.44699E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.02952E-04	2.03118E-04	1.71851E-04	9.04624E-07		1.29012E-05
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.62724E-04	2.66182E-04	2.37270E-04	2.77921E-06		1.60308E-05
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	3.37285E-04	3.44610E-04	3.15045E-04	5.09469E-06		1.95135E-05
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	6.72375E-04	6.51775E-04	6.08932E-04	1.85761E-05		2.38102E-05
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.79542E-03	1.56099E-03	1.57023E-03	1.51338E-05		1.44302E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	4.47231E-03	3.72624E-03	3.99402E-03	2.37497E-05		4.14065E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	8.65174E-03	7.33585E-03	7.80949E-03	5.52686E-05		1.23766E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.28547E-02	2.09032E-02	2.13473E-02	1.14129E-04		1.28721E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	5.27740E-02	5.00681E-02	5.06055E-02	1.92911E-04		1.04818E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	7.35460E-02	7.10470E-02	7.13892E-02	1.64170E-04		4.16506E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	9.20891E-02	9.01530E-02	9.03402E-02	1.35610E-04		6.36224E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.15202E-01	1.14518E-01	1.14262E-01	8.52226E-05		1.00116E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.41775E-01	1.43150E-01	1.42223E-01	5.83028E-05		2.23434E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.91153E-01	1.94695E-01	1.94495E-01	2.15962E-04		3.20226E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.74144E-01	1.78545E-01	1.77834E-01	2.13442E-04		3.20226E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.19776E-01	1.22527E-01	1.22550E-01	1.53533E-04		2.43259E-04

Table 8.61: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 36.57 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	9.16909E-06	3.65178E-06	7.76244E-06	1.97252E-06		1.62427E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.92184E-05	7.07315E-06	1.37835E-05	5.18846E-06		3.09091E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.81601E-05	1.46362E-05	2.08610E-05	6.41077E-06		3.51935E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.95024E-05	2.48924E-05	3.17593E-05	8.07269E-06		3.23902E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	5.25191E-05	3.61874E-05	4.39379E-05	7.07908E-06		3.96883E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	6.85593E-05	4.96917E-05	5.81959E-05	6.96069E-06		5.77240E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.59228E-04	1.15398E-04	1.34265E-04	7.39208E-06		8.83371E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	5.07863E-04	4.40106E-04	4.43856E-04	2.00194E-05		4.50867E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.64053E-03	1.33752E-03	1.44460E-03	3.27858E-05		8.79870E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	3.74351E-03	3.24420E-03	3.38465E-03	5.01085E-05		2.57549E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.31973E-02	1.23693E-02	1.24047E-02	7.37721E-05		1.73739E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	3.75815E-02	3.61804E-02	3.62158E-02	9.24826E-05		4.03516E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	5.72638E-02	5.59281E-02	5.58121E-02	1.30109E-04		6.23118E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	7.63927E-02	7.51343E-02	7.51175E-02	7.17590E-05		1.11915E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.01850E-01	1.01144E-01	1.01071E-01	1.07105E-04		8.07032E-05
1.60000E+01	3.239600E+02	3.291900E+02	3.265750E+02	1.22112E-01	1.22785E-01	1.21876E-01	1.22830E-04		1.35690E-04
1.70000E+01	3.291900E+02	3.344100E+02	3.318000E+02	1.62946E-01	1.63946E-01	1.64079E-01	1.10558E-04		1.27111E-04
1.80000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.70426E-01	1.72426E-01	1.72193E-01	9.68462E-05		6.23118E-05
1.90000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.50677E-01	1.52721E-01	1.52720E-01	1.76638E-04		1.10224E-04
2.00000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.01285E-01	1.02092E-01	1.02928E-01	1.06223E-04		8.74086E-05

Table 8.62: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 41.80 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.83135E-06	2.89019E-06	2.84817E-06	1.10916E-06		1.06676E-06
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	6.98044E-06	6.52758E-06	4.73784E-06	1.23510E-06		1.41737E-06
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.26207E-05	1.04828E-05	6.53299E-06	1.49091E-06		1.96760E-06
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.77138E-05	1.86245E-05	1.01721E-05	1.99760E-06		2.39567E-06
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	2.46069E-05	2.80744E-05	1.36746E-05	1.81258E-06		2.67778E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	3.26287E-05	3.84554E-05	2.09820E-05	1.70153E-06		2.72939E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.15596E-05	1.00464E-04	5.71304E-05	4.20715E-06		5.27764E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	2.86858E-04	2.87177E-04	2.34190E-04	1.38005E-05		1.02144E-05
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.05805E-03	9.75424E-04	9.50655E-04	1.54258E-05		1.00776E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.71330E-03	2.42980E-03	2.50627E-03	4.52319E-05		1.47937E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.20598E-02	1.12540E-02	1.13856E-02	9.27596E-05		1.67390E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	3.97711E-02	3.83606E-02	3.83653E-02	8.50967E-05		1.26535E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.46362E-02	6.32903E-02	6.31029E-02	8.18629E-05		6.69559E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	9.02487E-02	8.91155E-02	8.88021E-02	1.00447E-04		1.26535E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.23792E-01	1.23719E-01	1.22802E-01	1.24362E-04		5.79855E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.86914E-01	1.88062E-01	1.87967E-01	1.07799E-04		4.56227E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.97969E-01	1.99834E-01	2.00013E-01	8.98919E-05		5.79855E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.68874E-01	1.70577E-01	1.70809E-01	7.54194E-05		3.34779E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.11507E-01	1.11890E-01	1.12945E-01	8.48690E-05		2.53069E-05

Table 8.63: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 52.25 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.72100E-07	2.84947E-07	5.17269E-07	3.46904E-07		2.40065E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	9.06504E-07	6.46476E-07	8.43767E-07	4.85465E-07		7.62091E-08
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	1.28312E-06	8.14775E-07	1.20907E-06	5.88271E-07		2.54240E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	1.92092E-06	1.17952E-06	2.15739E-06	5.75194E-07		5.54542E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	3.09528E-06	2.39632E-06	3.07360E-06	3.18431E-07		7.92511E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.41699E-06	3.23309E-06	5.64254E-06	9.04075E-07		1.28708E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.79589E-05	1.32767E-05	1.84017E-05	1.47840E-06		7.91528E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	1.09100E-04	9.42878E-05	9.31465E-05	2.67490E-06		4.52397E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	5.60800E-04	5.01810E-04	4.84736E-04	1.23263E-05		1.38743E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.67860E-03	1.46168E-03	1.48803E-03	2.53551E-05		1.83044E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.82241E-03	9.29104E-03	9.24331E-03	4.79464E-05		7.37989E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	3.91077E-02	3.82052E-02	3.80310E-02	8.04490E-05		1.22998E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.93748E-02	6.86534E-02	6.83009E-02	1.55886E-04		5.63648E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.01228E-01	1.00913E-01	1.00416E-01	1.02296E-04		2.45996E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.63103E-01	1.63503E-01	1.63501E-01	1.54078E-04		3.68994E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.88094E-01	1.89152E-01	1.89060E-01	9.98981E-05		6.50845E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.83643E-01	1.84707E-01	1.84706E-01	2.16494E-04		1.22998E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.48283E-01	1.48945E-01	1.49098E-01	2.47659E-04		1.09323E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	9.49657E-02	9.45506E-02	9.55449E-02	1.37275E-04		1.22998E-05

Table 8.64: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 62.70 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	2.81055E-07	1.51258E-07	2.22178E-07	1.54837E-07		5.45060E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	4.03190E-07	2.42093E-07	3.55759E-07	2.21931E-07		1.25630E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	6.47994E-07	5.24048E-07	4.71413E-07	4.34544E-07		5.09984E-08
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	6.01772E-07	1.20181E-06	9.29714E-07	3.86775E-07		1.61206E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.07566E-06	2.08258E-06	1.52367E-06	2.26428E-07		2.29553E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.46889E-06	3.35619E-06	2.31601E-06	6.96822E-07		3.22403E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.07725E-05	1.36949E-05	1.01218E-05	1.89014E-06		9.51768E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	7.24744E-05	7.32653E-05	6.54366E-05	4.68140E-06		8.87128E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	4.15534E-04	3.86656E-04	3.80610E-04	8.17698E-06		6.96327E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.40067E-03	1.26303E-03	1.28484E-03	1.44186E-05		1.51262E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.01065E-02	9.47762E-03	9.69540E-03	3.34967E-05		1.41320E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	4.52561E-02	4.40787E-02	4.43596E-02	9.64385E-05		4.41826E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	8.33247E-02	8.25558E-02	8.24207E-02	1.07280E-04		3.67621E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.39822E-01	1.39481E-01	1.39586E-01	1.73240E-04		4.24492E-05
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.69656E-01	1.70389E-01	1.69878E-01	1.04145E-04		2.12246E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.78622E-01	1.79465E-01	1.79044E-01	8.26841E-05		6.82276E-05
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.63963E-01	1.64926E-01	1.64645E-01	9.91109E-05		9.80323E-05
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.27495E-01	1.28246E-01	1.28165E-01	1.96261E-04		1.22540E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	7.98498E-02	7.96373E-02	8.04600E-02	1.55532E-04		3.24211E-05

Table 8.65: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 73.15 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	9.50395E-07	2.14928E-08	1.12274E-07	7.08850E-07		3.99336E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.34186E-06	2.06648E-07	3.11680E-07	7.42627E-07		1.13595E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.35386E-06	2.67569E-07	6.84570E-07	1.02641E-06		1.20772E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	2.82099E-06	8.67160E-07	1.00511E-06	1.21939E-06		3.53971E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	3.74844E-06	1.77908E-06	1.62632E-06	1.10883E-06		2.58537E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	4.85921E-06	1.46526E-06	2.50898E-06	1.24430E-06		1.52027E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.30205E-05	8.62591E-06	9.06443E-06	2.25887E-06		1.47779E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	7.03976E-05	6.14801E-05	5.73263E-05	3.45557E-06		3.14068E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	4.00322E-04	3.67565E-04	3.64993E-04	1.36549E-05		3.33792E-07
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.46336E-03	1.35216E-03	1.33458E-03	1.84282E-05		2.73102E-06
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	1.21110E-02	1.15549E-02	1.15099E-02	3.29225E-05		1.51724E-05
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	5.75626E-02	5.67167E-02	5.64715E-02	2.20914E-05		1.06206E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.20502E-01	1.19871E-01	1.20023E-01	5.52618E-05		4.55171E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.51269E-01	1.51382E-01	1.51111E-01	8.65133E-05		0.00000E+00
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.67206E-01	1.67889E-01	1.67575E-01	8.88275E-05		9.10341E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.65090E-01	1.66030E-01	1.65828E-01	8.37649E-05		1.51724E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.45551E-01	1.46189E-01	1.46242E-01	1.14219E-04		1.82068E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	1.10448E-01	1.10696E-01	1.10899E-01	4.40063E-05		6.06894E-05
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	6.82996E-02	6.78767E-02	6.85685E-02	2.64419E-05		0.00000E+00

Table 8.66: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 94.05 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	4.22574E-08	4.52378E-09	1.43264E-07	4.06433E-08		7.78859E-08
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.38929E-07	5.31817E-08	2.65686E-07	8.07779E-08		1.19363E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	3.90938E-07	1.77184E-07	6.44928E-07	1.91260E-07		2.36331E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	6.29051E-07	1.43372E-07	1.17713E-06	1.67637E-07		2.29536E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	1.23800E-06	5.93579E-07	1.82472E-06	5.79453E-08		2.13732E-07
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	2.91918E-06	1.56844E-06	2.71320E-06	2.87452E-07		2.44123E-07
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	1.18488E-05	1.01772E-05	9.55145E-06	1.05584E-06		5.21588E-07
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	8.72133E-05	7.80100E-05	7.58778E-05	2.65058E-06		5.50917E-07
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	6.09160E-04	5.55450E-04	5.48058E-04	1.05925E-05		2.67926E-06
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	2.34055E-03	2.21179E-03	2.17641E-03	2.66111E-05		1.26169E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	2.22023E-02	2.14696E-02	2.15830E-02	2.84180E-05		6.70654E-06
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	1.10495E-01	1.09646E-01	1.10108E-01	3.58159E-04		1.34131E-04
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	1.46566E-01	1.46197E-01	1.46377E-01	2.36721E-04		1.54687E-04
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	1.57111E-01	1.57208E-01	1.57000E-01	1.68656E-04		1.40037E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	1.55956E-01	1.56524E-01	1.56034E-01	1.33474E-04		5.84663E-05
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	1.43261E-01	1.44035E-01	1.43560E-01	1.26289E-04		1.80455E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	1.19951E-01	1.20664E-01	1.20530E-01	2.18415E-04		2.15863E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	8.80094E-02	8.82387E-02	8.84324E-02	2.56471E-04		1.34131E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	5.33939E-02	5.31595E-02	5.35584E-02	1.11856E-04		6.14665E-05

Table 8.67: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 156.75 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00			9.76170E-07			1.62927E-07
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01			1.68679E-06			4.30129E-07
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01			3.32090E-06			5.54605E-07
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01			6.94757E-06			9.26075E-07
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01			1.11852E-05			1.67888E-06
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01			1.99162E-05			2.54546E-06
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01			8.76159E-05			5.97002E-06
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02			7.33421E-04			6.62870E-06
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02			6.28236E-03			1.52073E-05
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02			2.71738E-02			5.69327E-05
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02			1.13174E-01			1.75599E-04
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02			1.54942E-01			3.83188E-05
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02			1.49596E-01			9.57969E-05
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02			1.39289E-01			1.70292E-04
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02			1.24689E-01			2.00030E-04
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02			1.05990E-01			2.87391E-04
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02			8.38989E-02			2.66171E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02			5.91067E-02			2.35434E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02			3.49927E-02			1.61996E-04

Table 8.68: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities for CR insertion depth d_{CR} = 365.76 cm

Zone				Mean value			Standard deviation		
No	lower bound	upper bound	center	Tractebel	IRSN	AREVA NP	Tractebel	IRSN	AREVA NP
1.00000E+00	0.000000E+00	1.045000E+01	5.225000E+00	1.16355E-02	1.10857E-02	1.13455E-02	2.50828E-04		3.13879E-04
2.00000E+00	1.045000E+01	2.090000E+01	1.567500E+01	1.99286E-02	1.93085E-02	1.94181E-02	3.68120E-04		5.36413E-04
3.00000E+00	2.090000E+01	3.135000E+01	2.612500E+01	2.89589E-02	2.82748E-02	2.81907E-02	5.13360E-04		6.63348E-04
4.00000E+00	3.135000E+01	4.180000E+01	3.657500E+01	3.77256E-02	3.71478E-02	3.68471E-02	6.49710E-04		8.16106E-04
5.00000E+00	4.180000E+01	5.225000E+01	4.702500E+01	4.61997E-02	4.57768E-02	4.53186E-02	7.66431E-04		1.04980E-03
6.00000E+00	5.225000E+01	6.270000E+01	5.747500E+01	5.41948E-02	5.42240E-02	5.35075E-02	8.38432E-04		1.24789E-03
7.00000E+00	6.270000E+01	1.045000E+02	8.360000E+01	7.21775E-02	7.30742E-02	7.17448E-02	1.22805E-03		1.43360E-03
8.00000E+00	1.045000E+02	1.463000E+02	1.254000E+02	9.34805E-02	9.60941E-02	9.38811E-02	1.42885E-03		1.39253E-03
9.00000E+00	1.463000E+02	1.881100E+02	1.672050E+02	1.03840E-01	1.08023E-01	1.04817E-01	1.33318E-03		4.62839E-04
1.00000E+01	1.881100E+02	2.090100E+02	1.985600E+02	1.04155E-01	1.07773E-01	1.05425E-01	8.69192E-04		5.97133E-04
1.10000E+01	2.090100E+02	2.717100E+02	2.403600E+02	9.28928E-02	9.41958E-02	9.38547E-02	8.62799E-04		1.16857E-03
1.20000E+01	2.717100E+02	2.926100E+02	2.821600E+02	7.26890E-02	7.14131E-02	7.30339E-02	1.18839E-03		1.37635E-03
1.30000E+01	2.926100E+02	3.030600E+02	2.978350E+02	6.22412E-02	6.08605E-02	6.24967E-02	1.12605E-03		1.37452E-03
1.40000E+01	3.030600E+02	3.135100E+02	3.082850E+02	5.44485E-02	5.29450E-02	5.47094E-02	1.05781E-03		1.31611E-03
1.50000E+01	3.135100E+02	3.239600E+02	3.187350E+02	4.64443E-02	4.48567E-02	4.65232E-02	9.92899E-04		1.24395E-03
1.60000E+01	3.239600E+02	3.344100E+02	3.291850E+02	3.79109E-02	3.67315E-02	3.80121E-02	8.43329E-04		1.06876E-03
1.70000E+01	3.344100E+02	3.448600E+02	3.396350E+02	2.91712E-02	2.79049E-02	2.91470E-02	8.03992E-04		7.83382E-04
1.80000E+01	3.448600E+02	3.553100E+02	3.500850E+02	2.01433E-02	1.92041E-02	2.00547E-02	6.30552E-04		5.37816E-04
1.90000E+01	3.553100E+02	3.657600E+02	3.605350E+02	1.17634E-02	1.11061E-02	1.16731E-02	3.98674E-04		3.35499E-04

Table 9.1: Evaluation of the results from the contributors for the 30 MWd/kg U axial burn-up profile:
Relative deviations of the contributors' k_{eff} results from the arithmetic mean of the neutron multiplication factor k_{eff} (see Table 8.1)

Contributor ↓	Relative deviation from the k_{eff} arithmetic mean											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.00662	0.00494	0.00645	0.00492	0.00646	0.00469	0.00590	0.00454	0.00625	0.00640	0.00466	0.00672
VTT	-0.00256	-0.00416	-0.00207	-0.00430	-0.00183	-0.00398	-0.00282	-0.00380	-0.00209	-0.00187	-0.00286	-0.00092
CEA	-0.00017		0.00073		0.00053		0.00004		-0.00021	0.00006		-0.00023
IRSN	0.00069	-0.00070	0.00070	-0.00073	0.00092	-0.00089	0.00025	-0.00118	0.00049	0.00051	-0.00131	0.00008
TN International	0.00665	0.00502	0.00589	0.00503	0.00685	0.00528	0.00655	0.00499	0.00642	0.00643	0.00423	0.00549
AREVA (SCALE 5.1)	0.00178	0.00021	0.00177	0.00028	0.00179	0.00033	0.00162	0.00028	0.00202	0.00197	0.00032	0.00209
AREVA (MCNP5 1.30)	-0.00137	-0.00297	-0.00161	-0.00292	-0.00132	-0.00308	-0.00171	-0.00301	-0.00150	-0.00141	-0.00314	-0.00136
AREVA (MCNP5 1.40)									-0.00013			
BfS (SCALE 4.4a)	-0.00274		-0.00325		-0.00417		-0.00012		-0.00310	-0.00305		-0.00245
BfS (SCALE 5.0)	-0.00277		-0.00270		-0.00249		-0.00287		-0.00256	-0.00262		-0.00264
Serco Group	-0.00009	-0.00233	-0.00010	-0.00228	-0.00083	-0.00235	-0.00012	-0.00181	0.00009	-0.00057	-0.00190	-0.00087
ORNL (SCALE 5.1)	-0.00434		-0.00447		-0.00446		-0.00493		-0.00430	-0.00443		-0.00441
ORNL (MCNP5)	-0.00168		-0.00134		-0.00145		-0.00181		-0.00139	-0.00142		-0.00149

Table continued on next page.

Table 9.1 continued

Contributor ↓	Relative deviation from the k_{eff} arithmetic mean					
CR insertion depth/cm →	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00509					0.00753
VTT	-0.00376					-0.00205
CEA						-0.00081
IRSN	-0.00177					0.00008
TN International	0.00397					0.00511
AREVA (SCALE 5.1)	0.00056					0.00236
AREVA (MCNP5 1.30)	-0.00285					-0.00094
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						-0.00196
BfS (SCALE 5.0)						-0.00243
Serco Group	-0.00124					-0.00157
ORNL (SCALE 5.1)						-0.00429
ORNL (MCNP5)						-0.00103

Table 9.2: Evaluation of the results from the contributors for the 30 MWd/kg U uniform burn-up distribution:
Relative deviations of the contributors' k_{eff} results from the arithmetic mean of the neutron multiplication factor k_{eff} (see Table 8.3)

Contributor ↓	Relative deviation from the k_{eff} arithmetic mean											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.00854	0.00713	0.00851	0.00705	0.00858	0.00724	0.00855	0.00692	0.00839	0.00864	0.00690	0.00853
VTT	-0.00131	-0.00312	-0.00136	-0.00279	-0.00151	-0.00321	-0.00146	-0.00324	-0.00179	-0.00159	-0.00452	-0.00264
CEA	0.00024		0.00003		0.00021		0.00065		0.00012	-0.00070		0.00067
IRSN	-0.00068	-0.00200	-0.00074	-0.00226	-0.00075	-0.00220	-0.00058	-0.00214	-0.00064	-0.00056	-0.00190	-0.00040
TN International	0.00368	0.00232	0.00421	0.00258	0.00388	0.00251	0.00342	0.00299	0.00420	0.00467	0.00349	0.00458
AREVA (SCALE 5.1)	0.00197	0.00040	0.00198	0.00043	0.00180	0.00045	0.00193	0.00037	0.00196	0.00230	0.00090	0.00234
AREVA (MCNP5 1.30)	-0.00108	-0.00242	-0.00107	-0.00253	-0.00120	-0.00269	-0.00127	-0.00276	-0.00126	-0.00098	-0.00251	-0.00123
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	-0.00290		-0.00365		-0.00272		-0.00295		-0.00259	-0.00253		-0.00284
BfS (SCALE 5.0)	-0.00252		-0.00254		-0.00267		-0.00182		-0.00202	-0.00195		-0.00266
Serco Group	-0.00012	-0.00231	0.00015	-0.00248	0.00026	-0.00210	-0.00079	-0.00215	-0.00064	-0.00131	-0.00236	-0.00073
ORNL (SCALE 5.1)	-0.00440		-0.00427		-0.00447		-0.00436		-0.00443	-0.00439		-0.00436
ORNL (MCNP5)	-0.00140		-0.00127		-0.00140		-0.00132		-0.00131	-0.00161		-0.00124

Table continued on next page.

Table 9.2 continued

Contributor ↓	Relative deviation from the k_{eff} arithmetic mean					
CR insertion depth/cm →	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00678					0.00811
VTT	-0.00396					-0.00138
CEA						-0.00038
IRSN	-0.00178					-0.00074
TN International	0.00296					0.00367
AREVA (SCALE 5.1)	0.00072					0.00225
AREVA (MCNP5 1.30)	-0.00260					-0.00108
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						-0.00281
BfS (SCALE 5.0)						-0.00259
Serco Group	-0.00212					0.00052
ORNL (SCALE 5.1)						-0.00445
ORNL (MCNP5)						-0.00113

Table 9.3: Evaluation of the results from the contributors for the 50 MWd/kg U axial burn-up profile:
Relative deviations of the contributors' k_{eff} results from the arithmetic mean of the neutron multiplication factor k_{eff} (see Table 8.5)

Contributor ↓	Relative deviation from the k_{eff} arithmetic mean											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.00897	0.00709	0.00880	0.00679	0.00844	0.00673	0.00860	0.00673	0.00866	0.00903	0.00750	0.00943
VTT	-0.00293	-0.00485	-0.00339	-0.00496	-0.00337	-0.00446	-0.00261	-0.00422	-0.00220	-0.00244	-0.00421	-0.00217
CEA	-0.00021		-0.00036		-0.00020		-0.00026		0.00049	-0.00045		0.00026
IRSN	0.00011	-0.00154	0.00018	-0.00198	0.00013	-0.00167	-0.00007	-0.00176	-0.00044	-0.00061	-0.00243	-0.00091
TN International	0.00681	0.00513	0.00706	0.00558	0.00746	0.00577	0.00688	0.00459	0.00643	0.00591	0.00350	0.00495
AREVA (SCALE 5.1)	0.00219	0.00031	0.00222	0.00049	0.00239	0.00066	0.00246	0.00064	0.00249	0.00247	0.00084	0.00244
AREVA (MCNP5 1.30)	-0.00195	-0.00378	-0.00188	-0.00381	-0.00190	-0.00353	-0.00191	-0.00365	-0.00189	-0.00153	-0.00330	-0.00159
AREVA (MCNP5 1.40)						-0.00219						
BfS (SCALE 4.4a)	-0.00302		-0.00306		-0.00254		-0.00336		-0.00332	-0.00311		-0.00235
BfS (SCALE 5.0)	-0.00272		-0.00261		-0.00232		-0.00285		-0.00286	-0.00226		-0.00225
Serco Group	-0.00065	-0.00236	-0.00023	-0.00211	-0.00143	-0.00131	-0.00019	-0.00233	-0.00074	-0.00076	-0.00189	-0.00118
ORNL (SCALE 5.1)	-0.00463		-0.00484		-0.00481		-0.00475		-0.00495	-0.00458		-0.00481
ORNL (MCNP5)	-0.00197		-0.00189		-0.00185		-0.00194		-0.00167	-0.00167		-0.00182

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Table 9.3 continued

Contributor ↓ CR insertion depth/cm →	Relative deviation from the k_{eff} arithmetic mean					
	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00798					0.01024
VTT	-0.00372					-0.00319
CEA						-0.00056
IRSN	-0.00250					-0.00112
TN International	0.00318					0.00485
AREVA (SCALE 5.1)	0.00079					0.00266
AREVA (MCNP5 1.30)	-0.00328					-0.00116
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						-0.00196
BfS (SCALE 5.0)						-0.00192
Serco Group	-0.00245					-0.00207
ORNL (SCALE 5.1)						-0.00444
ORNL (MCNP5)						-0.00133

Table 9.4: Evaluation of the results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Relative deviations of the contributors' k_{eff} results from the arithmetic mean of the neutron multiplication factor k_{eff} (see Table 8.7)

Contributor ↓	Relative deviation from the k_{eff} arithmetic mean											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.01348	0.01198	0.01341	0.01194	0.01325	0.01148	0.01287	0.01097	0.01232	0.01222	0.01066	0.01201
VTT	-0.00144	-0.00321	-0.00179	-0.00364	-0.00242	-0.00487	-0.00282	-0.00485	-0.00223	-0.00179	-0.00429	-0.00236
CEA	0.00017		-0.00005		-0.00020		-0.00124		-0.00121	-0.00123		-0.00021
IRSN	-0.00244	-0.00402	-0.00269	-0.00417	-0.00246	-0.00323	-0.00169	-0.00343	-0.00219	-0.00227	-0.00331	-0.00206
TN International	0.00187	0.00048	0.00199	0.00071	0.00253	0.00215	0.00377	0.00227	0.00390	0.00376	0.00210	0.00305
AREVA (SCALE 5.1)	0.00242	0.00092	0.00221	0.00078	0.00243	0.00125	0.00307	0.00142	0.00273	0.00286	0.00111	0.00276
AREVA (MCNP5 1.30)	-0.00155	-0.00304	-0.00167	-0.00312	-0.00155	-0.00317	-0.00139	-0.00304	-0.00190	-0.00159	-0.00318	-0.00133
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	-0.00251		-0.00225		-0.00204		-0.00275		-0.00200	-0.00220		-0.00242
BfS (SCALE 5.0)	-0.00245		-0.00182		-0.00141		-0.00134		-0.00128	-0.00205		-0.00185
Serco Group	-0.00085	-0.00310	-0.00071	-0.00251	-0.00144	-0.00362	-0.00217	-0.00333	-0.00120	-0.00119	-0.00309	-0.00121
ORNL (SCALE 5.1)	-0.00490		-0.00484		-0.00494		-0.00475		-0.00496	-0.00491		-0.00480
ORNL (MCNP5)	-0.00178		-0.00179		-0.00176		-0.00156		-0.00198	-0.00161		-0.00157

Table continued on next page.

Table 9.4 continued

Contributor ↓	Relative deviation from the k_{eff} arithmetic mean					
CR insertion depth/cm →	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.01030					0.01214
VTT	-0.00341					-0.00213
CEA						-0.00008
IRSN	-0.00414					-0.00246
TN International	0.00157					0.00219
AREVA (SCALE 5.1)	0.00102					0.00267
AREVA (MCNP5 1.30)	-0.00306					-0.00100
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						-0.00170
BfS (SCALE 5.0)						-0.00205
Serco Group	-0.00228					-0.00138
ORNL (SCALE 5.1)						-0.00475
ORNL (MCNP5)						-0.00144

Table 9.5: Comparison of k_{eff} results obtained for the Phase II-E axial burn-up profiles by means of different MCNP versions in combination with different libraries

Average burn-up of axial burn-up profile used /MWd/kg U	CR insertion depth /cm	Tractebel	VTT	ORNL	AREVA NP GmbH	AREVA NP GmbH
		MCNP5 1.40 ENDF/B-V	MCNP4C MCB based on JEF 2.2	MCNP5 1.40 ENDF/B-VI.6 (.66c)	MCNP5 1.30 ENDF/VI.6 and .8 (.66c resp. 62.c)	MCNP5 1.40 LANL / T-16 (.69c)
30.00000	41.80000	1.00686 +/- 0.00009	0.99851 +/- 0.00027	0.99921 +/- 0.00007	0.99910 +/- 0.00006	1.00048 +/- 0.00006
50.00000	26.12000	0.91702 +/- 0.00002	0.90683 +/- 0.00025		0.90768 +/- 0.00012	0.90890 +/- 0.00017

Table 9.6: Evaluation of the results from the contributors: End effect Δk of the 30 MWd/kg U axial burn-up profile

Contributor ↓	End effect Δk											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.00777	0.00785	0.00831	0.00992	0.01200	0.01519	0.01820	0.02101	0.02214	0.02164	0.01966	0.01709
VTT	0.00833	0.00889	0.00953	0.01041	0.01363	0.01677	0.01927	0.02258	0.02373	0.02337	0.02336	0.02045
CEA	0.00917		0.01093		0.01429		0.02006		0.02375	0.02444		0.01786
IRSN	0.01091	0.01119	0.01165	0.01341	0.01561	0.01885	0.02146	0.02412	0.02519	0.02474	0.02234	0.01923
TN International	0.01252	0.01262	0.01194	0.01438	0.01696	0.02038	0.02383	0.02528	0.02640	0.02557	0.02260	0.01976
AREVA (SCALE 5.1)	0.00940	0.00975	0.01005	0.01179	0.01399	0.01747	0.02038	0.02313	0.02418	0.02342	0.02121	0.01855
AREVA (MCNP5 1.30)	0.00928	0.00938	0.00970	0.01151	0.01383	0.01715	0.02019	0.02290	0.02380	0.02323	0.02109	0.01861
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.00970		0.01060		0.01250		0.02340		0.02350	0.02310		0.01910
BfS (SCALE 5.0)	0.00930		0.01006		0.01411		0.01956		0.02349	0.02296		0.01874
Serco Group	0.00960	0.00990	0.01000	0.01210	0.01290	0.01730	0.02130	0.02350	0.02480	0.02440	0.02220	0.01860
ORNL (SCALE 5.1)	0.00959		0.00999		0.01391		0.02000		0.02410	0.02354		0.01862
ORNL (MCNP5)	0.00928		0.01016		0.01390		0.02014		0.02396	0.02384		0.01848
sample mean	0.00957	0.00994	0.01024	0.01193	0.01397	0.01759	0.02065	0.02322	0.02409	0.02369	0.02178	0.01876
sqrt of the variance	0.00120	0.00156	0.00096	0.00157	0.00132	0.00164	0.00163	0.00133	0.00104	0.00101	0.00122	0.00085

Table continued on next page.

Table 9.6 continued

Contributor ↓	End effect Δk					
CR insertion depth/cm →	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.01241					-0.00218
VTT	0.01419					-0.00224
CEA						-0.00201
IRSN	0.01401					-0.00074
TN International	0.01511					-0.00011
AREVA (SCALE 5.1)	0.01387		0.00522			-0.00146
AREVA (MCNP5 1.30)	0.01374	0.00862		0.00458	0.00150	-0.00143
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						-0.00070
BfS (SCALE 5.0)						-0.00141
Serco Group	0.01490					-0.00370
ORNL (SCALE 5.1)						-0.00140
ORNL (MCNP5)						-0.00147
sample mean	0.01403	0.00862	0.00522	0.00458	0.00150	-0.00157
sqrt of the variance	0.00088					0.00092

Table 9.7: Evaluation of the results from the contributors:
Standard deviations(Δk) of the end effect Δk of the 30 MWd/kg U axial burn-up profile (see Equation (9.6))

Contributor ↓	s(Δk)											
CR insertion depth/cm →	**0.00000**	**5.22000**	**10.45000**	**15.67000**	**20.90000**	**26.12000**	**31.35000**	**36.57000**	**41.80000**	**52.25000**	**62.70000**	**73.15000**
Tractebel	0.00013	0.00008	0.00010	0.00009	0.00011	0.00009	0.00004	0.00009	0.00012	0.00006	0.00007	0.00006
VTT	0.00036	0.00036	0.00035	0.00037	0.00036	0.00037	0.00036	0.00036	0.00037	0.00037	0.00037	0.00036
CEA	0.00045		0.00045		0.00045		0.00045		0.00045	0.00045		0.00046
IRSN	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012
TN International	0.00021	0.00023	0.00018	0.00027	0.00025	0.00012	0.00011	0.00020	0.00022	0.00014	0.00020	0.00026
AREVA (SCALE 5.1)	0.00006	0.00006	0.00007	0.00006	0.00007	0.00006	0.00011	0.00006	0.00014	0.00007	0.00007	0.00008
AREVA (MCNP5 1.30)	0.00008	0.00014	0.00008	0.00008	0.00008	0.00013	0.00008	0.00008	0.00008	0.00008	0.00008	0.00009
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.00050		0.00050		0.00058		0.00050		0.00058	0.00057		0.00057
BfS (SCALE 5.0)	0.00032		0.00033		0.00030		0.00031		0.00031	0.00033		0.00033
Serco Group	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042
ORNL (SCALE 5.1)	0.00010		0.00010		0.00011		0.00011		0.00011	0.00011		0.00011
ORNL (MCNP5)	0.00010		0.00010		0.00010		0.00010		0.00010	0.00017		0.00010

Table continued on next page.

Table 9.7 continued

Contributor ↓ / CR insertion depth/cm →	s(Δk)					
	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00012					0.00004
VTT	0.00037					0.00035
CEA						0.00046
IRSN	0.00013					0.00012
TN International	0.00024					0.00028
AREVA (SCALE 5.1)	0.00011		0.00007			0.00007
AREVA (MCNP5 1.30)	0.00014	0.00008		0.00008	0.00014	0.00009
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.00050
BfS (SCALE 5.0)						0.00033
Serco Group	0.00042					0.00042
ORNL (SCALE 5.1)						0.00011
ORNL (MCNP5)						0.00010

Table 9.8: Evaluation of the results from the contributors: Absolute deviations of the contributors' Δk values from the mean end effect Δk value of the 30 MWd/kg U axial burn-up profile (cf. Table 9.6)

Contributor ↓	Absolute deviation from the mean end effect											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	-0.00180	-0.00209	-0.00194	-0.00201	-0.00197	-0.00240	-0.00245	-0.00221	-0.00195	-0.00205	-0.00212	-0.00167
VTT	-0.00124	-0.00105	-0.00071	-0.00152	-0.00034	-0.00082	-0.00138	-0.00064	-0.00035	-0.00032	0.00157	0.00170
CEA	-0.00040		0.00069		0.00032		-0.00059		-0.00034	0.00075		-0.00090
IRSN	0.00134	0.00125	0.00140	0.00148	0.00164	0.00126	0.00081	0.00091	0.00111	0.00106	0.00056	0.00047
TN International	0.00295	0.00268	0.00169	0.00245	0.00299	0.00279	0.00318	0.00207	0.00231	0.00189	0.00082	0.00101
AREVA (SCALE 5.1)	-0.00017	-0.00019	-0.00019	-0.00014	0.00002	-0.00011	-0.00027	-0.00009	0.00009	-0.00027	-0.00057	-0.00021
AREVA (MCNP5 1.30)	-0.00029	-0.00056	-0.00054	-0.00042	-0.00014	-0.00044	-0.00046	-0.00032	-0.00029	-0.00046	-0.00069	-0.00015
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.00013		0.00036		-0.00147		0.00275		-0.00059	-0.00059		0.00034
BfS (SCALE 5.0)	-0.00027		-0.00018		0.00014		-0.00109		-0.00060	-0.00072		-0.00002
Serco Group	0.00003	-0.00004	-0.00024	0.00017	-0.00107	-0.00029	0.00065	0.00028	0.00071	0.00071	0.00042	-0.00016
ORNL (SCALE 5.1)	0.00002		-0.00025		-0.00006		-0.00065		0.00001	-0.00015		-0.00014
ORNL (MCNP5)	-0.00029		-0.00008		-0.00007		-0.00051		-0.00013	0.00015		-0.00028

Table continued on next page.

Table 9.8 continued

Contributor ↓ CR insertion depth/cm →	Absolute deviation from the mean end effect					
	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	-0.00162					-0.00060
VTT	0.00015					-0.00067
CEA						-0.00044
IRSN	-0.00002					0.00083
TN International	0.00107					0.00146
AREVA (SCALE 5.1)	-0.00016					0.00011
AREVA (MCNP5 1.30)	-0.00029					0.00014
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.00087
BfS (SCALE 5.0)						0.00016
Serco Group	0.00087					-0.00213
ORNL (SCALE 5.1)						0.00017
ORNL (MCNP5)						0.00010

Table 9.9: Evaluation of the results from the contributors: End effect Δk of the 50 MWd/kg U axial burn-up profile

Contributor ↓	End effect Δk											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.03661	0.03784	0.03940	0.04607	0.05228	0.05566	0.05383	0.05072	0.04705	0.04040	0.03440	0.02966
VTT	0.03868	0.04009	0.04142	0.04870	0.05488	0.05939	0.05704	0.05437	0.04975	0.04217	0.03690	0.03181
CEA	0.03972		0.04264		0.05586		0.05784		0.05135	0.04353		0.03214
IRSN	0.04221	0.04370	0.04534	0.05181	0.05806	0.06054	0.05840	0.05541	0.05135	0.04431	0.03769	0.03272
TN International	0.04449	0.04581	0.04749	0.05446	0.06045	0.06274	0.06007	0.05632	0.05237	0.04502	0.03838	0.03359
AREVA (SCALE 5.1)	0.03995	0.04118	0.04301	0.04986	0.05597	0.05885	0.05662	0.05340	0.04974	0.04262	0.03677	0.03149
AREVA (MCNP5 1.30)	0.03964	0.04090	0.04265	0.04930	0.05547	0.05880	0.05646	0.05332	0.04975	0.04284	0.03675	0.03142
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.03950		0.04210		0.05530		0.05630		0.04850	0.04190		0.03170
BfS (SCALE 5.0)	0.03972		0.04213		0.05497		0.05555		0.04829	0.04257		0.03127
Serco Group	0.04020	0.04220	0.04330	0.05030	0.05580	0.06120	0.05870	0.05480	0.05020	0.04320	0.03800	0.03170
ORNL (SCALE 5.1)	0.04009		0.04270		0.05572		0.05674		0.04959	0.04295		0.03155
ORNL (MCNP5)	0.03981		0.04274		0.05569		0.05657		0.05002	0.04273		0.03143
sample mean	0.04005	0.04167	0.04291	0.05007	0.05587	0.05960	0.05701	0.05405	0.04983	0.04285	0.03698	0.03171
sqrt of the variance	0.00188	0.00257	0.00198	0.00261	0.00193	0.00224	0.00160	0.00181	0.00145	0.00117	0.00131	0.00092

Table continued on next page.

Table 9.9 continued

Contributor ↓	End effect Δk					
CR insertion depth/cm →	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.02208					0.00342
VTT	0.02364					0.00414
CEA						0.00470
IRSN	0.02547					0.00641
TN International	0.02558					0.00768
AREVA (SCALE 5.1)	0.02382		0.01264			0.00517
AREVA (MCNP5 1.30)	0.02373	0.01678		0.01165	0.00814	0.00500
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.00490
BfS (SCALE 5.0)						0.00526
Serco Group	0.02380					0.00450
ORNL (SCALE 5.1)						0.00542
ORNL (MCNP5)						0.00525
sample mean	0.02402	0.01678	0.01264	0.01165	0.00814	0.00515
sqrt of the variance	0.00120					0.00108

Table 9.10: Evaluation of the results from the contributors:
Standard deviations(Δk) of the end effect Δk of the 50 MWd/kg U axial burn-up profile (see Equation (9.6))

Contributor ↓	s(Δk)											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	0.00007	0.00009	0.00008	0.00009	0.00006	0.00006	0.00013	0.00004	0.00007	0.00010	0.00007	0.00009
VTT	0.00034	0.00034	0.00034	0.00034	0.00034	0.00035	0.00035	0.00036	0.00035	0.00037	0.00035	0.00035
CEA	0.00042		0.00044		0.00044		0.00045		0.00045	0.00045		0.00044
IRSN	0.00011	0.00011	0.00012	0.00011	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012	0.00012
TN International	0.00014	0.00029	0.00011	0.00055	0.00014	0.00026	0.00016	0.00040	0.00019	0.00012	0.00031	0.00015
AREVA (SCALE 5.1)	0.00013	0.00009	0.00007	0.00008	0.00007	0.00006	0.00007	0.00006	0.00007	0.00007	0.00007	0.00014
AREVA (MCNP5 1.30)	0.00008	0.00008	0.00013	0.00008	0.00016	0.00013	0.00008	0.00008	0.00013	0.00019	0.00014	0.00022
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	0.00050		0.00050		0.00058		0.00050		0.00058	0.00050		0.00057
BfS (SCALE 5.0)	0.00030		0.00029		0.00029		0.00033		0.00036	0.00034		0.00032
Serco Group	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042	0.00042
ORNL (SCALE 5.1)	0.00010		0.00010		0.00010		0.00010		0.00011	0.00010		0.00010
ORNL (MCNP5)	0.00009		0.00009		0.00009		0.00010		0.00011	0.00010		0.00010

Table continued on next page.

Table 9.10 continued

Contributor ↓ / CR insertion depth/cm →	s(Δk)					
	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	0.00009					0.00012
VTT	0.00036					0.00036
CEA						0.00044
IRSN	0.00012					0.00012
TN International	0.00012					0.00013
AREVA (SCALE 5.1)	0.00013		0.00007			0.00009
AREVA (MCNP5 1.30)	0.00008	0.00008		0.00008	0.00008	0.00008
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						0.00058
BfS (SCALE 5.0)						0.00029
Serco Group	0.00042					0.00042
ORNL (SCALE 5.1)						0.00010
ORNL (MCNP5)						0.00010

Table 9.11: Evaluation of the results from the contributors: Absolute deviations of the contributors' Δk values from the mean end effect Δk value of the 50 MWd/kg U axial burn-up profile (see Table 9.9)

Contributor ↓	Absolute deviation from the mean end effect											
CR insertion depth/cm →	0.00000	5.22000	10.45000	15.67000	20.90000	26.12000	31.35000	36.57000	41.80000	52.25000	62.70000	73.15000
Tractebel	-0.00344	-0.00383	-0.00351	-0.00400	-0.00359	-0.00394	-0.00318	-0.00333	-0.00278	-0.00246	-0.00258	-0.00205
VTT	-0.00137	-0.00159	-0.00149	-0.00137	-0.00099	-0.00020	0.00003	0.00032	-0.00008	-0.00068	-0.00009	0.00010
CEA	-0.00033		-0.00027		-0.00001		0.00083		0.00152	0.00068		0.00043
IRSN	0.00216	0.00203	0.00243	0.00174	0.00219	0.00095	0.00139	0.00136	0.00152	0.00146	0.00071	0.00102
TN International	0.00444	0.00414	0.00458	0.00439	0.00457	0.00314	0.00306	0.00227	0.00254	0.00217	0.00140	0.00189
AREVA (SCALE 5.1)	-0.00010	-0.00050	0.00010	-0.00021	0.00010	-0.00075	-0.00039	-0.00065	-0.00009	-0.00024	-0.00021	-0.00021
AREVA (MCNP5 1.30)	-0.00041	-0.00077	-0.00026	-0.00077	-0.00040	-0.00080	-0.00055	-0.00073	-0.00008	-0.00001	-0.00023	-0.00029
AREVA (MCNP5 1.40)												
BfS (SCALE 4.4a)	-0.00055		-0.00081		-0.00057		-0.00071		-0.00133	-0.00095		-0.00001
BfS (SCALE 5.0)	-0.00034		-0.00078		-0.00090		-0.00146		-0.00154	-0.00028		-0.00044
Serco Group	0.00015	0.00053	0.00039	0.00023	-0.00007	0.00160	0.00169	0.00075	0.00037	0.00035	0.00102	-0.00001
ORNL (SCALE 5.1)	0.00004		-0.00021		-0.00016		-0.00027		-0.00024	0.00010		-0.00016
ORNL (MCNP5)	-0.00024		-0.00017		-0.00018		-0.00044		0.00019	-0.00012		-0.00028

Table continued on next page.

Table 9.11 continued

Contributor ↓	Absolute deviation from the mean end effect					
CR insertion depth/cm →	94.05000	125.40000	156.75000	167.20000	219.45000	365.76000
Tractebel	-0.00194					-0.00173
VTT	-0.00037					-0.00101
CEA						-0.00045
IRSN	0.00146					0.00126
TN International	0.00156					0.00252
AREVA (SCALE 5.1)	-0.00019					0.00001
AREVA (MCNP5 1.30)	-0.00029					-0.00015
AREVA (MCNP5 1.40)						
BfS (SCALE 4.4a)						-0.00025
BfS (SCALE 5.0)						0.00011
Serco Group	-0.00022					-0.00065
ORNL (SCALE 5.1)						0.00027
ORNL (MCNP5)						0.00010

Table 9.12: Modelling of the end effect as a function of the CR insertion depth: Input data for solving the system of Equations (9.26) and (9.27) by means of Brent's method

Parameter	Burn-up	
	$\hat{B}_{ABP} = 30\,\mathrm{MWd/kg\,U}$	$\hat{B}_{ABP} = 30\,\mathrm{MWd/kg\,U}$
$\Delta k(d_{CR} = 0)$	$9.5706533 \cdot 10^{-3}$	$4.005081 \cdot 10^{-2}$
d_m	46.059 cm	26.12 cm
$\Delta k(d_m)$	$2.43250679 \cdot 10^{-2}$	$5.959839 \cdot 10^{-2}$
d_C	290 cm	125.4 cm
$\Delta k(d_C)$	0	$1.68 \cdot 10^{-2}$
d_B	L	219.54 cm
$\Delta k(d_B)$	$\Delta k(L)$	$8.14 \cdot 10^{-3}$
L	365.76 cm	365.76 cm
$\Delta k(L)$	$-1.57029357 \cdot 10^{-3}$	$5.15 \cdot 10^{-3}$

Table 9.13: Modelling of the end effect as a function of the CR insertion depth: Parameters of the function (9.12) describing the end effect for CR insertion depths $d_{CR} \leq d_B$

Parameter	Burn-up	
	$\hat{B}_{ABP} = 30\,\mathrm{MWd/kg\,U}$	$\hat{B}_{ABP} = 30\,\mathrm{MWd/kg\,U}$
β	$2.94880299 \cdot 10^{-6}$	$2.2020528 \cdot 10^{-5}$
γ *)	3	3
λ	$6.211696 \cdot 10^{-2}$	$1.05067144 \cdot 10^{-1}$
ξ *)	$1.77 \cdot 10^{-1}$	$1.8432 \cdot 10^{-1}$
a_0	$9.5706533 \cdot 10^{-3}$	$4.005081 \cdot 10^{-2}$
a_1	$-4.27527426 \cdot 10^{-5}$	$-2.4037179 \cdot 10^{-4}$
a_2	$3.3609535 \cdot 10^{-8}$	$4.32513998 \cdot 10^{-7}$

*) fixed parameter

Table 9.14: Evaluation of the results from the contributors for the 30 MWd/kg U axial burn-up profile fission densities: Number of evaluated neutron histories (see Equation (9.55)) and related weight (see Equation (9.54))

CR insertion depth	Number of histories evaluated			Total number of histories	Weight		
	Tractebel	IRSN	AREVA NP		Tractebel	IRSN	AREVA NP
0.000000E+00	1.920000E+08	2.507400E+07	3.856000E+08	6.026740E+08	3.185802E-01	4.160458E-02	6.398152E-01
5.220000E+00	1.920000E+08	2.507400E+07	2.700000E+08	4.870740E+08	3.941906E-01	5.147883E-02	5.543306E-01
1.045000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
1.567000E+01	1.920000E+08	2.507400E+07	2.760000E+08	4.930740E+08	3.893939E-01	5.085241E-02	5.597537E-01
2.090000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
2.612000E+01	1.920000E+08	2.507400E+07	2.700000E+08	4.870740E+08	3.941906E-01	5.147883E-02	5.543306E-01
3.135000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
3.657000E+01	1.920000E+08	2.507400E+07	2.700000E+08	4.870740E+08	3.941906E-01	5.147883E-02	5.543306E-01
4.180000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
5.225000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
6.270000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
7.315000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
9.405000E+01	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01
1.567500E+02	0.000000E+00	0.000000E+00	2.160000E+08	2.160000E+08	0.000000E+00	0.000000E+00	1.000000E+00
3.657600E+02	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	4.433422E-01	5.789773E-02	4.987600E-01

Table 9.15: Evaluation of the results from the contributors for the 50 MWd/kg U axial burn-up profile fission densities: Number of evaluated neutron histories (see Equation (9.55)) and related weight (see Equation (9.54))

CR insertion depth	Number of histories evaluated			Total number of histories		Weight				
	Tractebel	IRSN	AREVA NP	with Tractebel	without Tractebel	Tractebel	IRSN	IRSN without Tractebel	AREVA NP	AREVA NP without Tractebel
0.000000E+00	1.920000E+08	2.507400E+07	1.440000E+08	3.610740E+08	1.69074E+08	5.31747E-01	6.94428E-02	1.48302E-01	3.98810E-01	8.51698E-01
5.220000E+00	1.920000E+08	2.507400E+07	6.574000E+09	6.791074E+09	6.59907E+09	2.82724E-02	3.69220E-03	3.79962E-03	9.68035E-01	9.96200E-01
1.045000E+01	1.920000E+08	2.507400E+07	1.656000E+09	1.873074E+09	1.68107E+09	1.02505E-01	1.33866E-02	1.49155E-02	8.84108E-01	9.85085E-01
1.567000E+01	1.920000E+08	2.507400E+07	2.070000E+09	2.287074E+09	2.09507E+09	8.39501E-02	1.09634E-02	1.19681E-02	9.05087E-01	9.88032E-01
2.090000E+01	1.920000E+08	2.507400E+07	5.576000E+09	5.793074E+09	5.60107E+09	3.31430E-02	4.32827E-03	4.47664E-03	9.62529E-01	9.95523E-01
2.612000E+01	1.920000E+08	2.507400E+07	1.097000E+10	1.118707E+10	1.09951E+10	1.71627E-02	2.24134E-03	2.28048E-03	9.80596E-01	9.97720E-01
3.135000E+01	1.920000E+08	2.507400E+07	5.576000E+09	5.793074E+09	5.60107E+09	3.31430E-02	4.32827E-03	4.47664E-03	9.62529E-01	9.95523E-01
3.657000E+01	1.920000E+08	2.507400E+07	1.097000E+10	1.118707E+10	1.09951E+10	1.71627E-02	2.24134E-03	2.28048E-03	9.80596E-01	9.97720E-01
4.180000E+01	1.920000E+08	2.507400E+07	1.917600E+10	1.939307E+10	1.92011E+10	9.90044E-03	1.29294E-03	1.30586E-03	9.88807E-01	9.98694E-01
5.225000E+01	1.920000E+08	2.507400E+07	1.917600E+10	1.939307E+10	1.92011E+10	9.90044E-03	1.29294E-03	1.30586E-03	9.88807E-01	9.98694E-01
6.270000E+01	1.920000E+08	2.507400E+07	1.917600E+10	1.939307E+10	1.92011E+10	9.90044E-03	1.29294E-03	1.30586E-03	9.88807E-01	9.98694E-01
7.315000E+01	1.920000E+08	2.507400E+07	1.917600E+10	1.939307E+10	1.92011E+10	9.90044E-03	1.29294E-03	1.30586E-03	9.88807E-01	9.98694E-01
9.405000E+01	1.920000E+08	2.507400E+07	9.656000E+09	9.873074E+09	9.68107E+09	1.94468E-02	2.53963E-03	2.59000E-03	9.78014E-01	9.97410E-01
1.567500E+02	0.000000E+00	0.000000E+00	1.674000E+09	1.674000E+09	1.67400E+09	0.00000E+00	0.00000E+00	0.00000E+00	1.00000E+00	1.00000E+00
3.657600E+02	1.920000E+08	2.507400E+07	2.160000E+08	4.330740E+08	2.41074E+08	4.43342E-01	5.78977E-02	1.04010E-01	4.98760E-01	8.95990E-01

Table 9.16: Evaluation of the results from the contributors: Axial burn-up profiles' fission densities for the CR insertion depth 0 cm (no CR insertion)

Zone		Fission densities for CR insertion depth 0 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean	standard deviation
1.000000E+00	5.225000E+00	6.233722E-05	1.103536E-05	4.093369E-07	6.266062E-08
2.000000E+00	1.567500E+01	7.686473E-05	1.305457E-05	6.624421E-07	1.086113E-07
3.000000E+00	2.612500E+01	8.245127E-05	1.323450E-05	6.939362E-07	6.069742E-08
4.000000E+00	3.657500E+01	8.086050E-05	1.188032E-05	5.697892E-07	5.461819E-08
5.000000E+00	4.702500E+01	8.647200E-05	1.201453E-05	5.489712E-07	3.094724E-08
6.000000E+00	5.747500E+01	9.721054E-05	1.276546E-05	6.704180E-07	4.764100E-08
7.000000E+00	8.360000E+01	1.929518E-04	1.752035E-05	3.488846E-06	1.808443E-07
8.000000E+00	1.254000E+02	7.280458E-04	4.329843E-05	2.362480E-05	1.288276E-06
9.000000E+00	1.672050E+02	2.661312E-03	1.168432E-04	1.598483E-04	8.277585E-06
1.000000E+01	1.985600E+02	6.339690E-03	2.339928E-04	5.881239E-04	2.473349E-05
1.100000E+01	2.403600E+02	2.109618E-02	4.276844E-04	4.640025E-03	1.238015E-04
1.200000E+01	2.821600E+02	5.511030E-02	5.201698E-04	2.160794E-02	3.696749E-04
1.300000E+01	2.978350E+02	7.949457E-02	4.676310E-04	4.073525E-02	4.866854E-04
1.400000E+01	3.082850E+02	1.006984E-01	3.444304E-04	6.269747E-02	5.322462E-04
1.500000E+01	3.187350E+02	1.247792E-01	2.638518E-04	9.451649E-02	4.900452E-04
1.600000E+01	3.291850E+02	1.485810E-01	4.036229E-04	1.375327E-01	4.193509E-04
1.700000E+01	3.396350E+02	1.656272E-01	6.608129E-04	1.874783E-01	5.281322E-04
1.800000E+01	3.500850E+02	1.635236E-01	8.264465E-04	2.274436E-01	9.673027E-04
1.900000E+01	3.605350E+02	1.306812E-01	7.822098E-04	2.225694E-01	1.347187E-03

Table 9.17: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 5.22 cm

Zone		Fission densities for CR insertion depth 5.22 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	4.157629E-05	4.804789E-06	1.358734E-07	1.200895E-07
2.000000E+00	1.567500E+01	5.416394E-05	6.494300E-06	1.878993E-07	1.799203E-07
3.000000E+00	2.612500E+01	5.807975E-05	6.475472E-06	2.115804E-07	6.793072E-08
4.000000E+00	3.657500E+01	5.638385E-05	5.399034E-06	3.424164E-07	6.135500E-08
5.000000E+00	4.702500E+01	6.286024E-05	5.179610E-06	5.270109E-07	1.189640E-07
6.000000E+00	5.747500E+01	7.503728E-05	5.374104E-06	6.770727E-07	1.186376E-07
7.000000E+00	8.360000E+01	1.623748E-04	9.052312E-06	2.277991E-06	3.570683E-07
8.000000E+00	1.254000E+02	6.403930E-04	3.595573E-05	1.609163E-05	1.307055E-06
9.000000E+00	1.672050E+02	2.389507E-03	1.114644E-04	1.104560E-04	4.363651E-06
1.000000E+01	1.985600E+02	5.672931E-03	2.113157E-04	4.118697E-04	5.090799E-06
1.100000E+01	2.403600E+02	1.864705E-02	4.078000E-04	3.423194E-03	1.276827E-05
1.200000E+01	2.821600E+02	4.860233E-02	5.042869E-04	1.654851E-02	4.752913E-05
1.300000E+01	2.978350E+02	7.011700E-02	4.313977E-04	3.184570E-02	6.849222E-05
1.400000E+01	3.082850E+02	8.872279E-02	3.310432E-04	4.965523E-02	7.406971E-05
1.500000E+01	3.187350E+02	1.098972E-01	2.253294E-04	7.590392E-02	5.372847E-05
1.600000E+01	3.291850E+02	1.308409E-01	3.035220E-04	1.116976E-01	2.585386E-05
1.700000E+01	3.396350E+02	1.460472E-01	5.367053E-04	1.536412E-01	7.115862E-05
1.800000E+01	3.500850E+02	1.446261E-01	7.034229E-04	1.874657E-01	1.101940E-04
1.900000E+01	3.579250E+02	1.255109E-01	7.163413E-04	1.919763E-01	1.419883E-04
2.000000E+01	3.631500E+02	1.077753E-01	2.567426E-04	1.772999E-01	9.547263E-05

Table 9.18: Evaluation of the results from the contributors: Axial burn-up profiles' fission densities for the CR insertion depth 10.45 cm

Zone		Fission densities for CR insertion depth 10.45 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	4.163843E-05	2.273334E-06	6.926083E-08	9.824721E-09
2.000000E+00	1.567500E+01	5.229034E-05	2.848246E-06	9.013980E-08	8.468804E-09
3.000000E+00	2.612500E+01	5.962636E-05	3.656576E-06	1.375026E-07	3.014089E-08
4.000000E+00	3.657500E+01	6.040525E-05	3.976968E-06	1.866191E-07	6.075659E-08
5.000000E+00	4.702500E+01	6.910667E-05	4.619630E-06	3.707735E-07	8.637112E-08
6.000000E+00	5.747500E+01	8.339221E-05	5.756205E-06	5.206708E-07	8.946057E-08
7.000000E+00	8.360000E+01	1.809510E-04	9.748543E-06	2.714859E-06	5.869887E-07
8.000000E+00	1.254000E+02	7.045525E-04	3.234586E-05	1.729329E-05	1.685081E-06
9.000000E+00	1.672050E+02	2.576161E-03	9.018381E-05	1.155453E-04	2.847466E-06
1.000000E+01	1.985600E+02	6.159052E-03	1.670534E-04	4.500473E-04	1.047636E-05
1.100000E+01	2.403600E+02	2.077958E-02	3.744400E-04	3.966056E-03	5.410542E-05
1.200000E+01	2.821600E+02	5.449064E-02	6.082103E-04	1.955063E-02	1.464380E-04
1.300000E+01	2.978350E+02	7.876805E-02	5.237045E-04	3.798977E-02	1.697964E-04
1.400000E+01	3.082850E+02	9.981995E-02	3.830249E-04	5.952047E-02	1.670514E-04
1.500000E+01	3.187350E+02	1.238835E-01	1.979037E-04	9.145510E-02	1.113101E-04
1.600000E+01	3.291850E+02	1.479764E-01	2.927052E-04	1.355711E-01	1.056862E-04
1.700000E+01	3.396350E+02	1.656770E-01	6.464148E-04	1.879226E-01	2.664891E-04
1.800000E+01	3.500850E+02	1.643981E-01	8.488416E-04	2.307233E-01	3.307002E-04
1.900000E+01	3.605350E+02	1.342196E-01	7.067823E-04	2.327140E-01	1.921572E-04

Table 9.19: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 15.67 cm

Zone		Fission densities for CR insertion depth 15.67 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	2.780816E-05	4.190747E-06	1.909923E-07	8.228294E-08
2.000000E+00	1.567500E+01	3.581854E-05	4.997494E-06	2.140548E-07	9.682856E-08
3.000000E+00	2.612500E+01	4.116869E-05	5.693920E-06	2.069852E-07	9.158659E-08
4.000000E+00	3.657500E+01	4.298019E-05	5.429130E-06	2.542282E-07	1.296864E-07
5.000000E+00	4.702500E+01	4.741521E-05	5.137750E-06	3.040552E-07	1.642153E-07
6.000000E+00	5.747500E+01	5.678741E-05	5.756665E-06	4.329013E-07	2.176672E-07
7.000000E+00	8.360000E+01	1.266009E-04	8.944130E-06	1.242304E-06	3.502644E-07
8.000000E+00	1.254000E+02	4.964278E-04	2.720813E-05	7.847612E-06	1.304742E-07
9.000000E+00	1.672050E+02	1.870409E-03	9.055331E-05	6.320595E-05	1.422915E-06
1.000000E+01	1.985600E+02	4.592678E-03	1.847271E-04	2.578795E-04	5.362715E-06
1.100000E+01	2.403600E+02	1.619806E-02	3.694626E-04	2.566530E-03	2.719687E-05
1.200000E+01	2.821600E+02	4.413378E-02	4.933256E-04	1.352969E-02	8.541779E-05
1.300000E+01	2.978350E+02	6.480503E-02	4.333014E-04	2.716891E-02	1.181335E-04
1.400000E+01	3.082850E+02	8.307692E-02	3.121766E-04	4.372268E-02	1.201626E-04
1.500000E+01	3.187350E+02	1.043543E-01	1.481825E-04	6.904812E-02	9.410832E-05
1.600000E+01	3.291850E+02	1.261627E-01	1.946537E-04	1.051966E-01	3.446416E-05
1.700000E+01	3.396350E+02	1.432863E-01	4.457591E-04	1.504547E-01	8.956947E-05
1.800000E+01	3.474750E+02	1.487747E-01	5.771971E-04	1.871930E-01	1.264684E-04
1.900000E+01	3.527000E+02	1.444505E-01	8.234619E-04	2.093445E-01	3.978603E-04
2.000000E+01	3.605350E+02	1.174193E-01	1.233602E-04	1.914435E-01	1.475724E-04

Table 9.20: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 20.90 cm

Zone		Fission densities for CR insertion depth 20.90 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	2.250701E-05	2.028477E-06	7.332479E-09	7.213529E-09
2.000000E+00	1.567500E+01	3.010284E-05	2.738615E-06	1.580039E-08	4.389983E-09
3.000000E+00	2.612500E+01	3.371143E-05	3.179413E-06	2.513861E-08	4.532292E-09
4.000000E+00	3.657500E+01	3.604778E-05	3.616635E-06	4.734700E-08	2.039454E-08
5.000000E+00	4.702500E+01	4.292124E-05	4.634149E-06	9.569917E-08	3.441986E-08
6.000000E+00	5.747500E+01	5.266037E-05	5.716683E-06	1.835829E-07	4.082710E-08
7.000000E+00	8.360000E+01	1.150929E-04	9.392751E-06	6.776866E-07	6.498446E-08
8.000000E+00	1.254000E+02	4.648522E-04	2.666026E-05	6.111744E-06	2.524676E-07
9.000000E+00	1.672050E+02	1.834440E-03	7.755570E-05	5.511175E-05	5.803521E-07
1.000000E+01	1.985600E+02	4.667683E-03	1.487151E-04	2.392825E-04	1.815261E-06
1.100000E+01	2.403600E+02	1.729260E-02	3.093722E-04	2.639162E-03	1.186411E-05
1.200000E+01	2.821600E+02	4.878418E-02	4.658458E-04	1.489781E-02	3.612982E-05
1.300000E+01	2.978350E+02	7.287315E-02	4.570047E-04	3.091030E-02	4.819182E-05
1.400000E+01	3.082850E+02	9.471193E-02	3.731332E-04	5.086972E-02	4.732258E-05
1.500000E+01	3.187350E+02	1.205361E-01	1.940275E-04	8.229299E-02	4.545645E-05
1.600000E+01	3.291850E+02	1.478697E-01	1.686007E-04	1.287478E-01	2.488667E-05
1.700000E+01	3.396350E+02	1.698853E-01	4.798662E-04	1.878595E-01	5.522371E-05
1.800000E+01	3.500850E+02	1.792187E-01	8.898132E-04	2.615647E-01	1.710257E-04
1.900000E+01	3.605350E+02	1.415283E-01	7.152255E-04	2.399165E-01	7.063866E-05

Table 9.21: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 26.12 cm

Zone		Fission densities for CR insertion depth 26.12 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	1.376934E-05	9.099221E-07	4.396263E-09	2.397647E-09
2.000000E+00	1.567500E+01	1.730859E-05	1.263956E-06	7.844558E-09	1.732890E-09
3.000000E+00	2.612500E+01	1.877163E-05	1.538175E-06	1.065339E-08	3.308486E-09
4.000000E+00	3.657500E+01	1.953100E-05	1.908083E-06	1.379235E-08	1.247576E-09
5.000000E+00	4.702500E+01	2.187152E-05	2.368297E-06	2.658491E-08	3.468219E-09
6.000000E+00	5.747500E+01	2.664464E-05	2.514844E-06	5.114950E-08	3.794481E-09
7.000000E+00	8.360000E+01	6.274201E-05	3.581010E-06	2.806573E-07	2.217804E-08
8.000000E+00	1.254000E+02	2.765328E-04	9.310495E-06	3.017283E-06	5.038465E-08
9.000000E+00	1.672050E+02	1.187861E-03	3.412971E-05	3.021056E-05	1.805587E-07
1.000000E+01	1.985600E+02	3.153192E-03	8.334783E-05	1.407908E-04	6.554742E-07
1.100000E+01	2.403600E+02	1.275963E-02	2.370871E-04	1.796316E-03	4.340418E-06
1.200000E+01	2.821600E+02	3.819962E-02	3.952928E-04	1.094013E-02	1.351488E-05
1.300000E+01	2.978350E+02	5.857370E-02	3.913475E-04	2.355820E-02	2.009128E-05
1.400000E+01	3.082850E+02	7.754646E-02	3.243948E-04	3.988774E-02	2.210537E-05
1.500000E+01	3.187350E+02	1.007231E-01	1.613205E-04	6.641984E-02	1.874591E-05
1.600000E+01	3.291850E+02	1.262989E-01	8.947199E-05	1.071565E-01	5.278913E-06
1.700000E+01	3.370250E+02	1.441675E-01	2.703616E-04	1.463462E-01	1.730600E-05
1.800000E+01	3.422500E+02	1.593478E-01	6.634207E-04	1.938078E-01	5.772296E-05
1.900000E+01	3.500850E+02	1.554209E-01	6.543400E-04	2.154070E-01	5.717523E-05
2.000000E+01	3.605350E+02	1.221642E-01	1.112011E-04	1.945058E-01	5.112919E-05

Table 9.22: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 31.35 cm

Zone		Fission densities for CR insertion depth 31.35 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	1.098003E-05	7.837064E-07	8.131450E-08	4.453119E-08
2.000000E+00	1.567500E+01	1.482861E-05	9.516515E-07	1.037159E-07	6.003196E-08
3.000000E+00	2.612500E+01	1.680374E-05	1.038338E-06	8.974939E-08	7.214454E-08
4.000000E+00	3.657500E+01	1.642320E-05	1.073989E-06	8.559237E-08	6.872090E-08
5.000000E+00	4.702500E+01	1.726266E-05	1.168617E-06	6.273060E-08	3.932763E-08
6.000000E+00	5.747500E+01	2.009951E-05	1.103991E-06	6.753318E-08	2.621784E-08
7.000000E+00	8.360000E+01	4.881615E-05	2.936289E-06	2.543297E-07	4.473974E-08
8.000000E+00	1.254000E+02	2.357361E-04	1.088532E-05	2.523942E-06	1.440677E-07
9.000000E+00	1.672050E+02	1.104501E-03	4.295798E-05	2.787027E-05	5.559521E-07
1.000000E+01	1.985600E+02	3.069198E-03	9.791994E-05	1.370108E-04	1.941755E-06
1.100000E+01	2.403600E+02	1.339952E-02	2.575460E-04	1.929359E-03	8.340204E-06
1.200000E+01	2.821600E+02	4.231118E-02	4.252946E-04	1.239804E-02	2.790435E-05
1.300000E+01	2.978350E+02	6.646809E-02	4.359354E-04	2.744154E-02	3.900288E-05
1.400000E+01	3.082850E+02	8.945503E-02	3.714254E-04	4.741816E-02	4.412571E-05
1.500000E+01	3.187350E+02	1.182975E-01	2.364094E-04	8.071440E-02	3.929327E-05
1.600000E+01	3.291850E+02	1.500435E-01	9.767456E-05	1.312383E-01	2.479205E-05
1.700000E+01	3.396350E+02	1.864245E-01	6.994075E-04	2.193231E-01	1.111627E-04
1.800000E+01	3.500850E+02	1.845721E-01	8.030895E-04	2.543972E-01	1.308059E-04
1.900000E+01	3.605350E+02	1.444736E-01	6.052589E-04	2.249718E-01	1.010851E-04

Table 9.23: Evaluation of the results from the contributors: Axial burn-up profiles' fission densities for the CR insertion depth 36.57 cm

Zone		Fission densities for CR insertion depth 36.57 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	6.263332E-06	3.868354E-07	1.514179E-08	1.315604E-08
2.000000E+00	1.567500E+01	8.402828E-06	4.319066E-07	2.127555E-08	1.169515E-08
3.000000E+00	2.612500E+01	9.622465E-06	4.733809E-07	1.141172E-08	6.022490E-09
4.000000E+00	3.657500E+01	1.009684E-05	2.613638E-07	1.070109E-08	4.933036E-09
5.000000E+00	4.702500E+01	1.084589E-05	3.496260E-07	1.495323E-08	3.981934E-09
6.000000E+00	5.747500E+01	1.388143E-05	6.926434E-07	2.762352E-08	3.406029E-09
7.000000E+00	8.360000E+01	3.529404E-05	2.187771E-06	1.722060E-07	1.111490E-08
8.000000E+00	1.254000E+02	1.561917E-04	8.949443E-06	1.832562E-06	3.680223E-08
9.000000E+00	1.672050E+02	7.458695E-04	3.013937E-05	2.027325E-05	1.150252E-07
1.000000E+01	1.985600E+02	2.191797E-03	6.845155E-05	1.020952E-04	4.380604E-07
1.100000E+01	2.403600E+02	1.034248E-02	1.805667E-04	1.571323E-03	4.020607E-06
1.200000E+01	2.821600E+02	3.453454E-02	3.249224E-04	1.061187E-02	1.164986E-05
1.300000E+01	2.978350E+02	5.572175E-02	3.063500E-04	2.407133E-02	1.760968E-05
1.400000E+01	3.082850E+02	7.645484E-02	2.522818E-04	4.235419E-02	2.055376E-05
1.500000E+01	3.187350E+02	1.030336E-01	1.355701E-04	7.340551E-02	2.332976E-05
1.600000E+01	3.265750E+02	1.249171E-01	1.136622E-05	1.059729E-01	2.040609E-05
1.700000E+01	3.318000E+02	1.485151E-01	3.872240E-04	1.530796E-01	2.767022E-05
1.800000E+01	3.396350E+02	1.619893E-01	5.238393E-04	1.896900E-01	4.385204E-05
1.900000E+01	3.500850E+02	1.586360E-01	5.674567E-04	2.135300E-01	5.292212E-05
2.000000E+01	3.605350E+02	1.226672E-01	1.489489E-04	1.855887E-01	4.581455E-05

**Table 9.24: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 41.80 cm**

Zone		Fission densities for CR insertion depth 41.80 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	3.569685E-06	5.657176E-07	7.897896E-10	7.815854E-10
2.000000E+00	1.567500E+01	4.654538E-06	7.026645E-07	2.686425E-09	2.641124E-09
3.000000E+00	2.612500E+01	5.401516E-06	7.801033E-07	5.891229E-09	4.763200E-09
4.000000E+00	3.657500E+01	5.923572E-06	8.487731E-07	7.672518E-09	5.857971E-09
5.000000E+00	4.702500E+01	6.468374E-06	8.971476E-07	1.013404E-08	5.181665E-09
6.000000E+00	5.747500E+01	8.916342E-06	8.716105E-07	1.542991E-08	3.791820E-09
7.000000E+00	8.360000E+01	2.635252E-05	1.542049E-06	1.227816E-07	1.285121E-08
8.000000E+00	1.254000E+02	1.491753E-04	7.733637E-06	1.726853E-06	4.783391E-08
9.000000E+00	1.672050E+02	7.705649E-04	2.862055E-05	2.087799E-05	1.075241E-07
1.000000E+01	1.985600E+02	2.279754E-03	7.228103E-05	1.089726E-04	3.207683E-07
1.100000E+01	2.403600E+02	1.124380E-02	1.838020E-04	1.796509E-03	2.095336E-06
1.200000E+01	2.821600E+02	3.898725E-02	3.731533E-04	1.253035E-02	8.866741E-06
1.300000E+01	2.978350E+02	6.412213E-02	3.922468E-04	2.889568E-02	1.446876E-05
1.400000E+01	3.082850E+02	8.927305E-02	3.430780E-04	5.151451E-02	1.509243E-05
1.500000E+01	3.187350E+02	1.209206E-01	2.030361E-04	8.883115E-02	1.326937E-05
1.600000E+01	3.291850E+02	1.654965E-01	3.981242E-04	1.638644E-01	1.690966E-05
1.700000E+01	3.396350E+02	1.869272E-01	5.840654E-04	2.151789E-01	2.964128E-05
1.800000E+01	3.500850E+02	1.805692E-01	6.098491E-04	2.353648E-01	3.324394E-05
1.900000E+01	3.605350E+02	1.391995E-01	5.957124E-04	2.018920E-01	4.033307E-05

Table 9.25: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 52.25 cm

Zone		Fission densities for CR insertion depth 52.25 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	1.302562E-06	3.967732E-07	2.751307E-09	1.143329E-09
2.000000E+00	1.567500E+01	1.708468E-06	3.901815E-07	1.386687E-09	1.297551E-09
3.000000E+00	2.612500E+01	2.049595E-06	2.083603E-07	1.664522E-09	8.137102E-10
4.000000E+00	3.657500E+01	2.411973E-06	1.886344E-07	4.292936E-09	4.806611E-10
5.000000E+00	4.702500E+01	3.412168E-06	2.344489E-07	7.623529E-09	1.094467E-09
6.000000E+00	5.747500E+01	4.896409E-06	2.976179E-07	1.424489E-08	1.204422E-09
7.000000E+00	8.360000E+01	2.034973E-05	1.241201E-06	1.166095E-07	1.311380E-09
8.000000E+00	1.254000E+02	1.216679E-04	5.843594E-06	1.641846E-06	2.527424E-08
9.000000E+00	1.672050E+02	6.307954E-04	2.505864E-05	2.048022E-05	1.613384E-07
1.000000E+01	1.985600E+02	1.956204E-03	6.351461E-05	1.109128E-04	5.120828E-07
1.100000E+01	2.403600E+02	1.071587E-02	1.986608E-04	1.995259E-03	1.965973E-06
1.200000E+01	2.821600E+02	3.957488E-02	3.684040E-04	1.455572E-02	7.604243E-06
1.300000E+01	2.978350E+02	6.695220E-02	3.583278E-04	3.437889E-02	9.878000E-06
1.400000E+01	3.082850E+02	9.432289E-02	2.968058E-04	6.113646E-02	1.538280E-05
1.500000E+01	3.187350E+02	1.368102E-01	2.610230E-04	1.192310E-01	5.940906E-06
1.600000E+01	3.291850E+02	1.660951E-01	3.459854E-04	1.670495E-01	1.114927E-05
1.700000E+01	3.396350E+02	1.811945E-01	4.627859E-04	2.046362E-01	2.717265E-05
1.800000E+01	3.500850E+02	1.711780E-01	5.359736E-04	2.153879E-01	3.253637E-05
1.900000E+01	3.605350E+02	1.304117E-01	6.138566E-04	1.814958E-01	3.256328E-05

Table 9.26: Evaluation of the results from the contributors: Axial burn-up profiles' fission densities for the CR insertion depth 62.70 cm

Zone		Fission densities for CR insertion depth 62.70 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	2.571166E-06	6.407072E-07	2.115070E-09	8.721204E-10
2.000000E+00	1.567500E+01	3.431632E-06	8.214300E-07	2.264098E-09	1.113134E-09
3.000000E+00	2.612500E+01	3.834769E-06	8.424786E-07	3.562631E-09	1.798081E-09
4.000000E+00	3.657500E+01	3.839753E-06	7.777743E-07	5.644508E-09	2.419402E-09
5.000000E+00	4.702500E+01	5.115184E-06	9.566153E-07	7.953801E-09	3.415855E-09
6.000000E+00	5.747500E+01	6.502131E-06	1.135957E-06	1.604547E-08	3.771948E-09
7.000000E+00	8.360000E+01	1.834251E-05	1.659331E-06	1.229177E-07	5.108952E-09
8.000000E+00	1.254000E+02	1.035459E-04	4.773861E-06	1.729449E-06	1.742374E-08
9.000000E+00	1.672050E+02	5.861133E-04	2.150260E-05	2.334340E-05	6.599049E-08
1.000000E+01	1.985600E+02	1.891790E-03	5.090629E-05	1.304872E-04	2.826964E-07
1.100000E+01	2.403600E+02	1.109627E-02	1.586960E-04	2.468329E-03	2.136175E-06
1.200000E+01	2.821600E+02	4.294357E-02	3.392853E-04	1.847811E-02	9.582791E-06
1.300000E+01	2.978350E+02	7.350254E-02	3.664782E-04	4.331102E-02	1.625127E-05
1.400000E+01	3.082850E+02	1.105345E-01	3.025913E-04	8.703210E-02	1.521772E-05
1.500000E+01	3.187350E+02	1.402066E-01	2.222168E-04	1.263645E-01	1.228154E-05
1.600000E+01	3.291850E+02	1.633076E-01	3.050057E-04	1.643669E-01	1.648827E-05
1.700000E+01	3.396350E+02	1.732323E-01	4.491745E-04	1.930266E-01	2.615731E-05
1.800000E+01	3.500850E+02	1.608752E-01	4.959943E-04	1.988894E-01	3.009692E-05
1.900000E+01	3.605350E+02	1.216762E-01	5.546928E-04	1.659074E-01	3.456582E-05

Table 9.27: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 73.15 cm

Zone		Fission densities for CR insertion depth 73.15 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	2.994452E-07	5.745985E-08	1.354630E-08	2.178122E-09
2.000000E+00	1.567500E+01	5.321565E-07	8.025587E-08	1.279174E-08	2.445284E-09
3.000000E+00	2.612500E+01	8.350605E-07	1.426100E-07	1.092656E-08	3.417401E-09
4.000000E+00	3.657500E+01	1.423460E-06	1.923280E-07	1.199142E-08	1.674414E-09
5.000000E+00	4.702500E+01	2.651038E-06	2.446917E-07	1.639375E-08	2.189515E-09
6.000000E+00	5.747500E+01	4.106399E-06	3.886726E-07	2.132069E-08	1.482222E-09
7.000000E+00	8.360000E+01	1.558304E-05	9.492999E-07	1.534005E-07	5.905542E-09
8.000000E+00	1.254000E+02	1.028205E-04	4.012061E-06	2.184754E-06	3.318229E-08
9.000000E+00	1.672050E+02	6.033019E-04	1.838263E-05	2.959291E-05	1.121282E-07
1.000000E+01	1.985600E+02	1.980330E-03	5.100242E-05	1.667950E-04	3.559763E-07
1.100000E+01	2.403600E+02	1.228490E-02	1.699045E-04	3.257430E-03	2.905199E-06
1.200000E+01	2.821600E+02	4.889774E-02	3.561886E-04	2.442709E-02	1.183354E-05
1.300000E+01	2.978350E+02	8.908389E-02	3.640582E-04	6.434939E-02	1.973752E-05
1.400000E+01	3.082850E+02	1.159071E-01	3.051863E-04	9.527951E-02	1.796647E-05
1.500000E+01	3.187350E+02	1.404937E-01	2.072784E-04	1.281630E-01	1.291429E-05
1.600000E+01	3.291850E+02	1.587644E-01	2.327012E-04	1.596847E-01	1.545800E-05
1.700000E+01	3.396350E+02	1.653074E-01	4.163917E-04	1.833148E-01	2.750007E-05
1.800000E+01	3.500850E+02	1.521465E-01	4.920404E-04	1.865853E-01	2.826407E-05
1.900000E+01	3.605350E+02	1.144027E-01	5.907975E-04	1.547399E-01	2.011397E-05

**Table 9.28: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 94.05 cm**

Zone		Fission densities for CR insertion depth 94.05 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean (adopted)	standard deviation
1.000000E+00	5.225000E+00	1.096862E-06	9.314988E-08	3.512984E-08	3.189382E-08
2.000000E+00	1.567500E+01	1.635270E-06	1.181430E-07	4.530357E-08	3.812374E-08
3.000000E+00	2.612500E+01	2.406053E-06	1.799139E-07	4.059268E-08	2.451437E-08
4.000000E+00	3.657500E+01	2.808962E-06	1.959145E-07	5.188683E-08	3.228564E-08
5.000000E+00	4.702500E+01	3.833811E-06	2.514161E-07	7.141264E-08	4.664139E-08
6.000000E+00	5.747500E+01	6.189711E-06	2.720765E-07	8.365566E-08	3.961579E-08
7.000000E+00	8.360000E+01	2.127190E-05	6.464494E-07	4.102556E-07	1.139644E-07
8.000000E+00	1.254000E+02	1.263259E-04	4.827060E-06	4.381908E-06	2.883186E-07
9.000000E+00	1.672050E+02	7.833244E-04	2.405486E-05	5.585894E-05	2.837101E-07
1.000000E+01	1.985600E+02	2.662957E-03	6.906661E-05	3.179423E-04	1.483741E-06
1.100000E+01	2.403600E+02	1.747720E-02	2.548351E-04	6.361616E-03	1.802554E-05
1.200000E+01	2.821600E+02	6.997620E-02	4.441677E-04	4.667032E-02	8.383794E-05
1.300000E+01	2.978350E+02	1.003281E-01	4.213291E-04	7.743372E-02	1.092660E-04
1.400000E+01	3.082850E+02	1.202923E-01	3.085311E-04	1.014442E-01	8.424549E-05
1.500000E+01	3.187350E+02	1.382550E-01	1.881063E-04	1.274401E-01	2.213099E-05
1.600000E+01	3.291850E+02	1.511145E-01	2.924081E-04	1.528820E-01	8.528947E-05
1.700000E+01	3.396350E+02	1.541732E-01	4.802876E-04	1.718479E-01	1.356570E-04
1.800000E+01	3.500850E+02	1.401018E-01	5.720034E-04	1.729561E-01	1.242310E-04
1.900000E+01	3.605350E+02	1.046700E-01	5.710043E-04	1.425852E-01	1.451057E-04

Table 9.29: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 156.75 cm

Zone		Fission densities for CR insertion depth 156.75 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean	standard deviation
1.000000E+00	5.225000E+00	5.509965E-06	1.842793E-06	2.147692E-07	1.442877E-07
2.000000E+00	1.567500E+01	7.484607E-06	2.162896E-06	1.105437E-07	4.157147E-08
3.000000E+00	2.612500E+01	8.656476E-06	2.111039E-06	8.567757E-08	2.651796E-08
4.000000E+00	3.657500E+01	1.047306E-05	1.533202E-06	1.335769E-07	1.740757E-08
5.000000E+00	4.702500E+01	1.293464E-05	1.250779E-06	1.958272E-07	1.868968E-08
6.000000E+00	5.747500E+01	1.939524E-05	8.849843E-07	3.518495E-07	3.610962E-08
7.000000E+00	8.360000E+01	7.046451E-05	2.052772E-06	2.585811E-06	7.103448E-08
8.000000E+00	1.254000E+02	4.775299E-04	7.642191E-06	3.928882E-05	3.236502E-07
9.000000E+00	1.672050E+02	3.077845E-03	2.959856E-05	5.567909E-04	2.331429E-06
1.000000E+01	1.985600E+02	1.058508E-02	7.873088E-05	3.154939E-03	2.794655E-05
1.100000E+01	2.403600E+02	4.223614E-02	1.512925E-04	2.287463E-02	1.076375E-04
1.200000E+01	2.821600E+02	8.461230E-02	1.110329E-04	5.891434E-02	1.132968E-04
1.300000E+01	2.978350E+02	1.047586E-01	1.040817E-04	8.229125E-02	5.768791E-05
1.400000E+01	3.082850E+02	1.188056E-01	1.466244E-04	1.019420E-01	4.538861E-05
1.500000E+01	3.187350E+02	1.319172E-01	2.158818E-04	1.241355E-01	4.360796E-05
1.600000E+01	3.291850E+02	1.409234E-01	2.951149E-04	1.462914E-01	1.762395E-04
1.700000E+01	3.396350E+02	1.417299E-01	2.957520E-04	1.628075E-01	2.834518E-04
1.800000E+01	3.500850E+02	1.272517E-01	2.650420E-04	1.629334E-01	3.154678E-04
1.900000E+01	3.605350E+02	9.348968E-02	1.794318E-04	1.340553E-01	3.273019E-04

**Table 9.30: Evaluation of the results from the contributors:
Axial burn-up profiles' fission densities for the CR insertion depth 365.76 cm
(full CR insertion)**

Zone		Fission densities for CR insertion depth 365.76 cm			
		Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
No	centre/cm	mean	standard deviation	mean	standard deviation
1.000000E+00	5.225000E+00	8.689642E-04	6.578684E-05	2.442700E-04	3.468001E-05
2.000000E+00	1.567500E+01	1.180562E-03	8.450952E-05	2.993473E-04	4.125128E-05
3.000000E+00	2.612500E+01	1.372002E-03	9.539209E-05	3.155509E-04	4.174207E-05
4.000000E+00	3.657500E+01	1.463969E-03	1.029784E-04	3.123411E-04	3.956917E-05
5.000000E+00	4.702500E+01	1.597793E-03	1.106736E-04	3.257971E-04	3.939518E-05
6.000000E+00	5.747500E+01	1.769630E-03	1.167972E-04	3.627765E-04	3.940962E-05
7.000000E+00	8.360000E+01	2.733696E-03	1.482215E-04	6.151897E-04	5.416692E-05
8.000000E+00	1.254000E+02	6.298904E-03	2.775973E-04	1.720335E-03	1.200482E-04
9.000000E+00	1.672050E+02	1.438460E-02	4.929331E-04	4.913289E-03	2.557454E-04
1.000000E+01	1.985600E+02	2.483027E-02	7.189007E-04	1.008908E-02	4.094153E-04
1.100000E+01	2.403600E+02	4.865446E-02	8.148520E-04	2.678880E-02	6.660727E-04
1.200000E+01	2.821600E+02	8.368686E-02	4.991420E-04	6.028177E-02	7.522351E-04
1.300000E+01	2.978350E+02	1.011565E-01	2.358798E-04	8.240263E-02	5.913758E-04
1.400000E+01	3.082850E+02	1.133377E-01	2.011943E-04	1.009634E-01	3.740985E-04
1.500000E+01	3.187350E+02	1.246502E-01	4.482432E-04	1.218155E-01	2.387549E-04
1.600000E+01	3.291850E+02	1.322638E-01	7.128352E-04	1.424150E-01	5.562239E-04
1.700000E+01	3.396350E+02	1.324291E-01	9.569846E-04	1.574919E-01	9.464218E-04
1.800000E+01	3.500850E+02	1.189928E-01	9.715675E-04	1.574779E-01	1.184195E-03
1.900000E+01	3.605350E+02	8.832839E-02	7.868844E-04	1.311651E-01	1.022191E-03

Table 9.31: Evaluation of the results from the contributors: Increase $\delta k(d_{CR})$ of the neutron multiplication factor due to CR insertion (see Equation (2.2)) ($s(\delta k)$:= standard deviation of δk)

CR insertion depth d_{CR}/cm	Average burn-up 30 MWd/kg U		Average burn-up 50 MWd/kg U	
	δk	$s(\delta k)$	δk	$s(\delta k)$
5.220000E+00	1.798680E-03	1.697466E-03	2.597343E-03	1.840406E-03
1.045000E+01	7.021419E-04	1.389111E-03	3.047984E-03	1.494526E-03
1.567000E+01	3.961469E-03	1.705114E-03	1.142414E-02	1.866363E-03
2.090000E+01	4.726117E-03	1.437224E-03	1.744802E-02	1.501671E-03
2.612000E+01	9.844282E-03	1.707129E-03	2.757176E-02	1.840464E-03
3.135000E+01	1.202476E-02	1.397225E-03	3.381055E-02	1.506424E-03
3.657000E+01	1.712042E-02	1.660287E-03	4.146688E-02	1.807212E-03
4.180000E+01	1.851421E-02	1.349618E-03	4.500139E-02	1.504853E-03
5.225000E+01	2.387900E-02	1.413863E-03	5.169369E-02	1.493012E-03
6.270000E+01	2.932867E-02	1.593134E-03	5.685225E-02	1.832694E-03
7.315000E+01	3.009179E-02	1.383792E-03	5.795302E-02	1.487612E-03
9.405000E+01	3.456929E-02	1.642673E-03	6.120581E-02	1.861555E-03
1.567500E+02	3.557656E-02	1.500000E-03	6.451314E-02	1.050287E-03
3.657600E+02	3.530491E-02	1.506321E-03	6.088981E-02	1.526067E-03

Table 9.32: Fission probability top end content C7 (see Equation (2.27))

CR insertion depth d_{CR}/cm	Content C7	
	Average burn-up 30 MWd/kg U	Average burn-up 50 MWd/kg U
0.000000E+00	7.687333E-01	9.264258E-01
5.220000E+00	7.687070E-01	9.317265E-01
1.045000E+01	7.721081E-01	9.293930E-01
1.567000E+01	7.867585E-01	9.405417E-01
2.090000E+01	7.996906E-01	9.488374E-01
2.612000E+01	8.207807E-01	9.547304E-01
3.135000E+01	8.317806E-01	9.576081E-01
3.657000E+01	8.457622E-01	9.590700E-01
4.180000E+01	8.544469E-01	9.567113E-01
5.225000E+01	8.577576E-01	9.531918E-01
6.270000E+01	8.472075E-01	9.420188E-01
7.315000E+01	8.275530E-01	9.197093E-01
9.405000E+01	7.691813E-01	8.612538E-01
1.567500E+02	6.494528E-01	7.690565E-01
3.657600E+02	5.664220E-01	7.222389E-01

Figures

Figure 2.1: Axial burn-up profiles selected for the Phase II-E benchmark (given on 35 equidistant nodes)

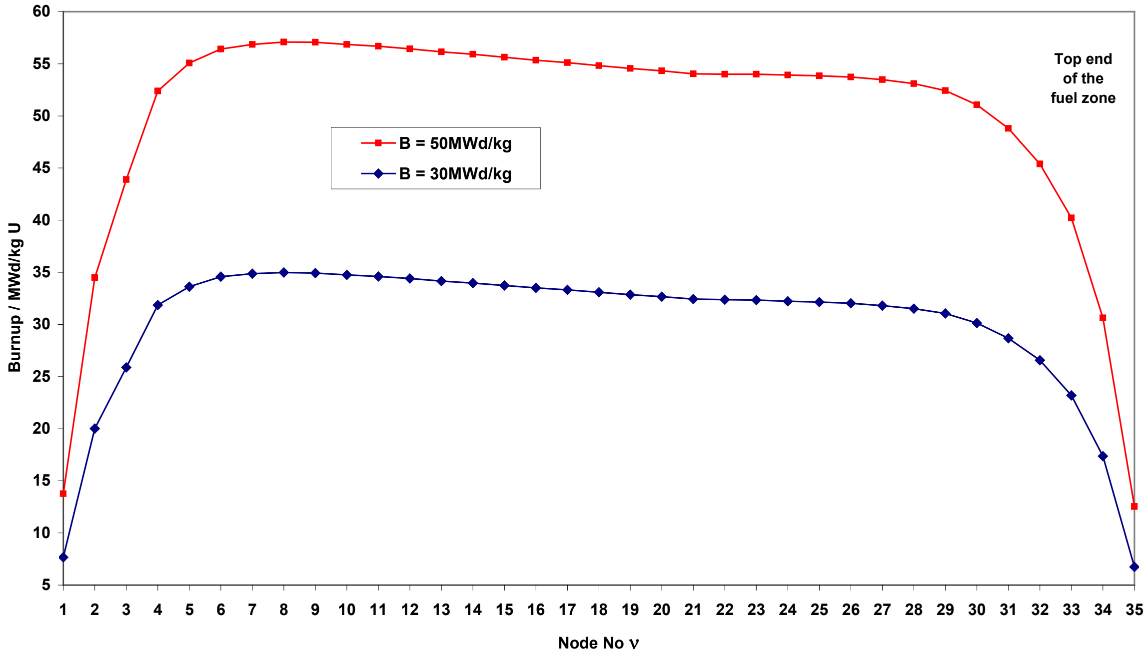


Figure 2.2: Phase II-E axial burn-up profiles normalised according to Equation (2.5)

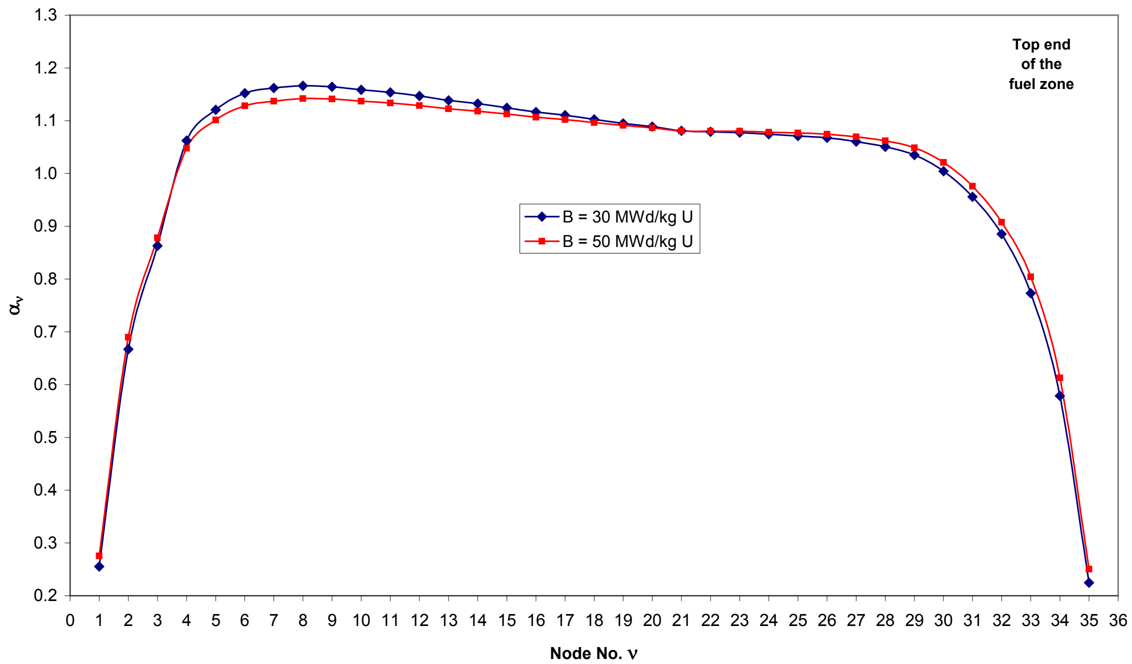


Figure 4.1: 17x17-(24-1) fuel assembly lattice type

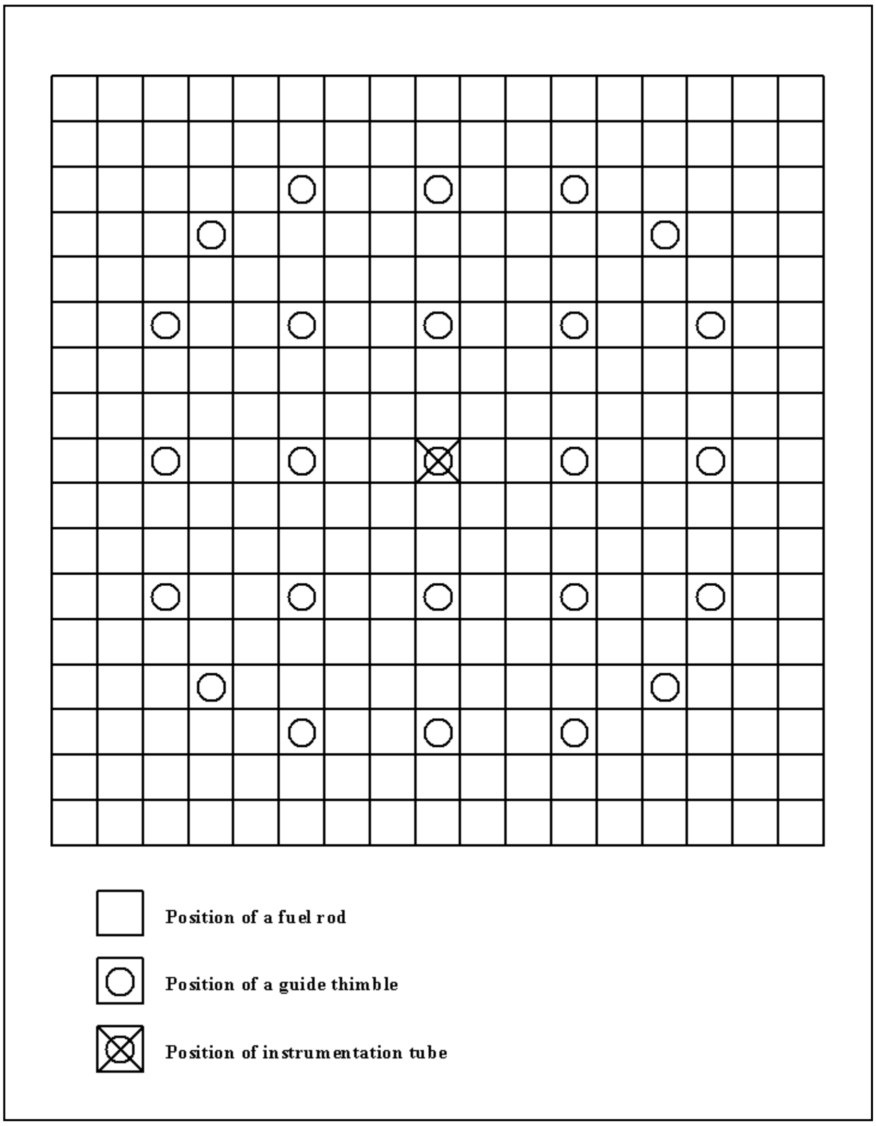


Figure 4.2: Phase II-E cask configuration: top view of the cask (at axial midplane)

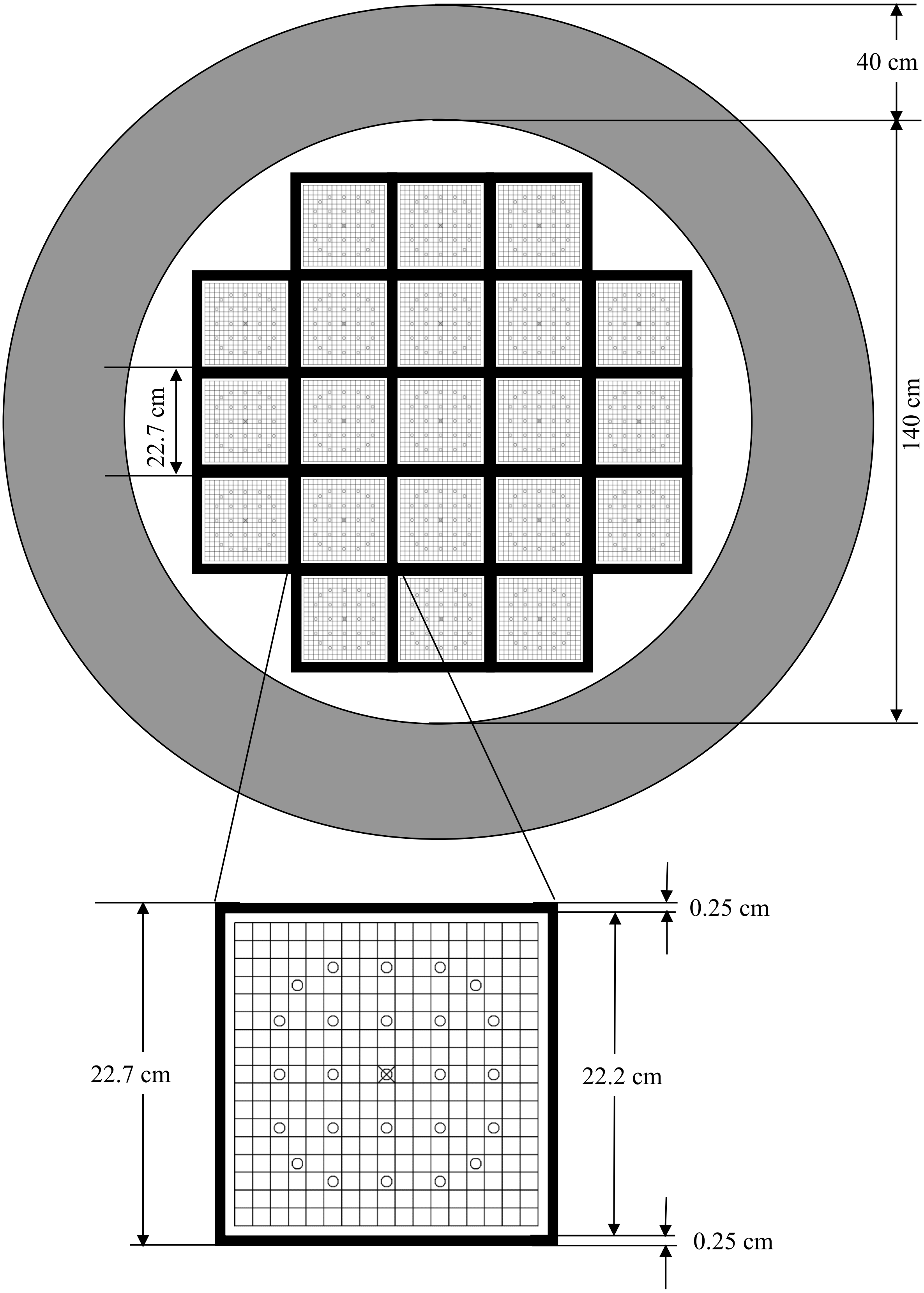


Figure 4.3: Phase II-E cask configuration: side view of the cask (FAHW:= fuel assembly hardware)

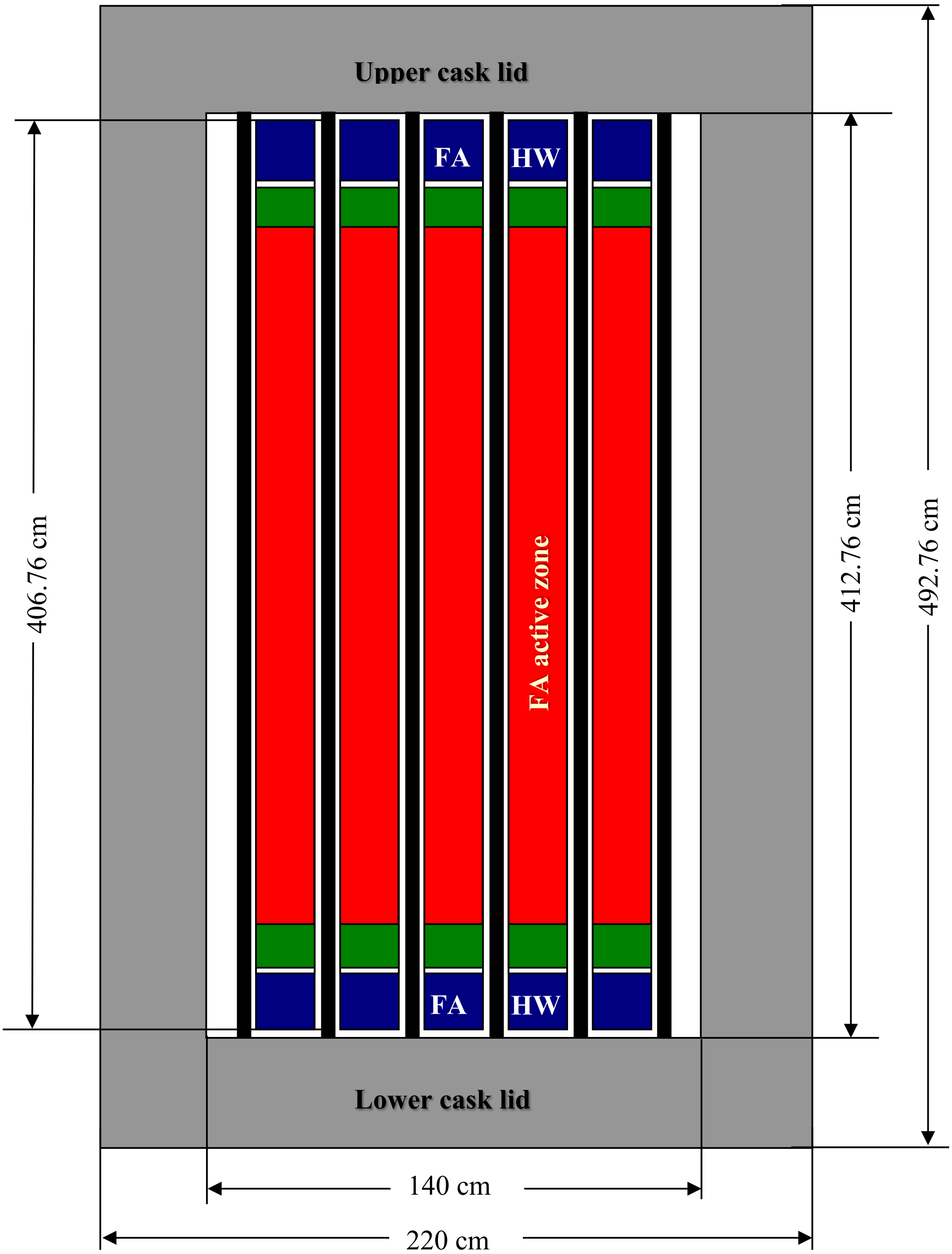


Figure 4.4: Fuel rod (schematic; dimensions in cm)

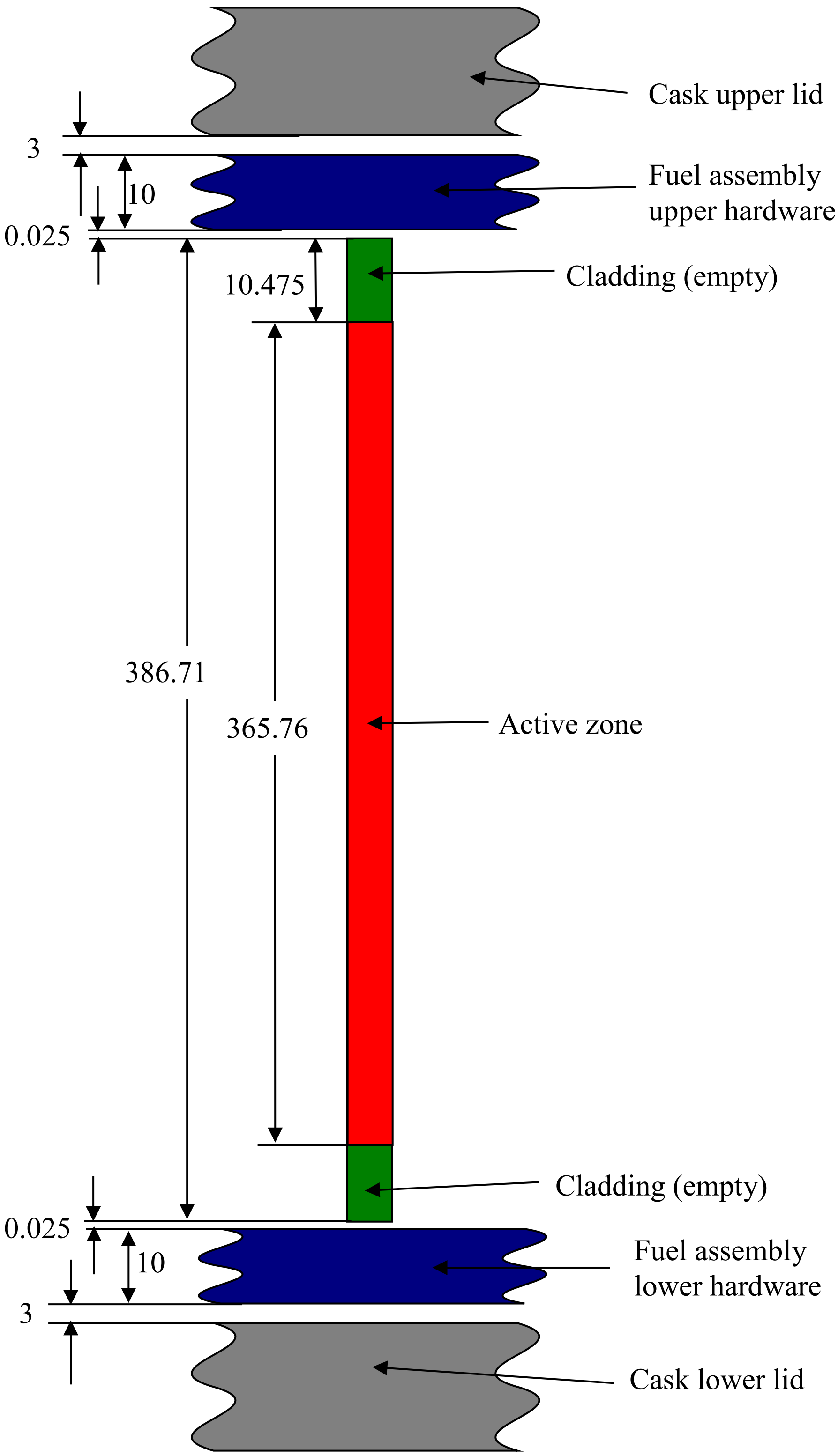
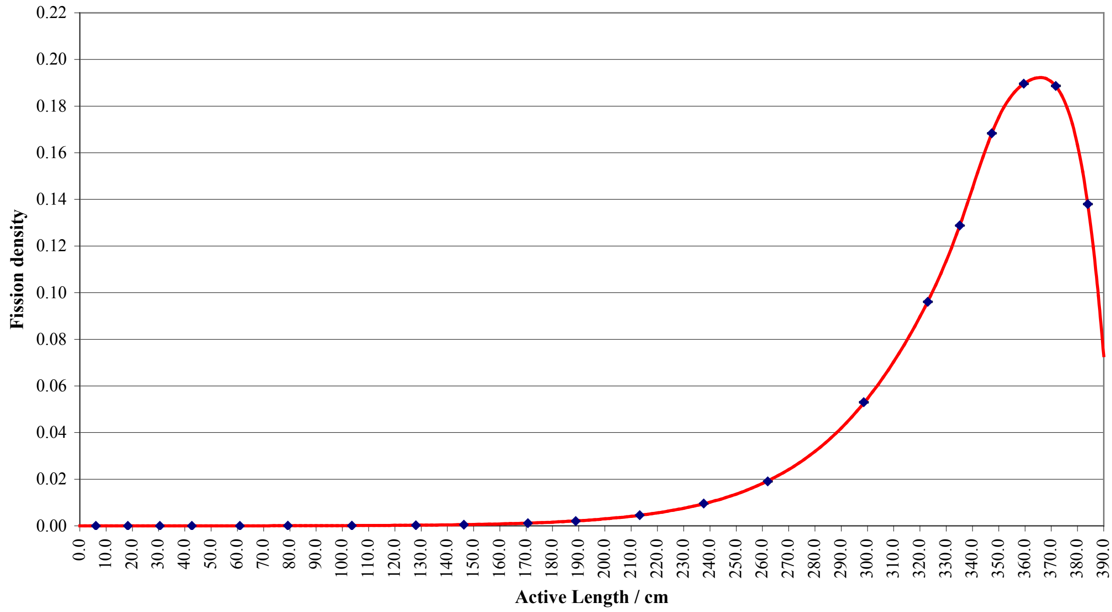


Figure 6.1: Results from Phase II-C:
Comparison of the non-normalised fission density distributions f(z) obtained for the Phase II-C axial burn-up profiles B32A222222 and B50A222222, [4]
Appendix VI, Figures VI.10 and VI.14

B32A222222



B50A222222

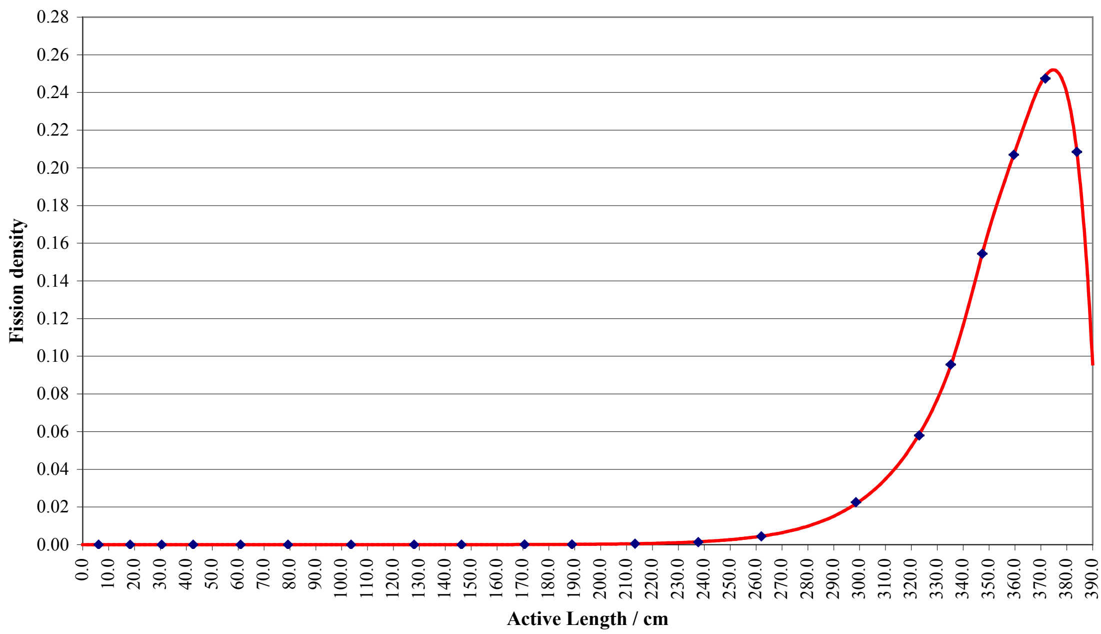


Figure 6.2: Absolute change ΔN of isotopic number densities N due to CR insertion during irradiation. Number densities were calculated by means of CASMO-4 [11] with 70-group cross-section library based on JEF 2.2 [12] for preparing the contribution of Framatome-ANP GmbH (now AREVA NP GmbH) to the Phase II-D benchmark, [1]

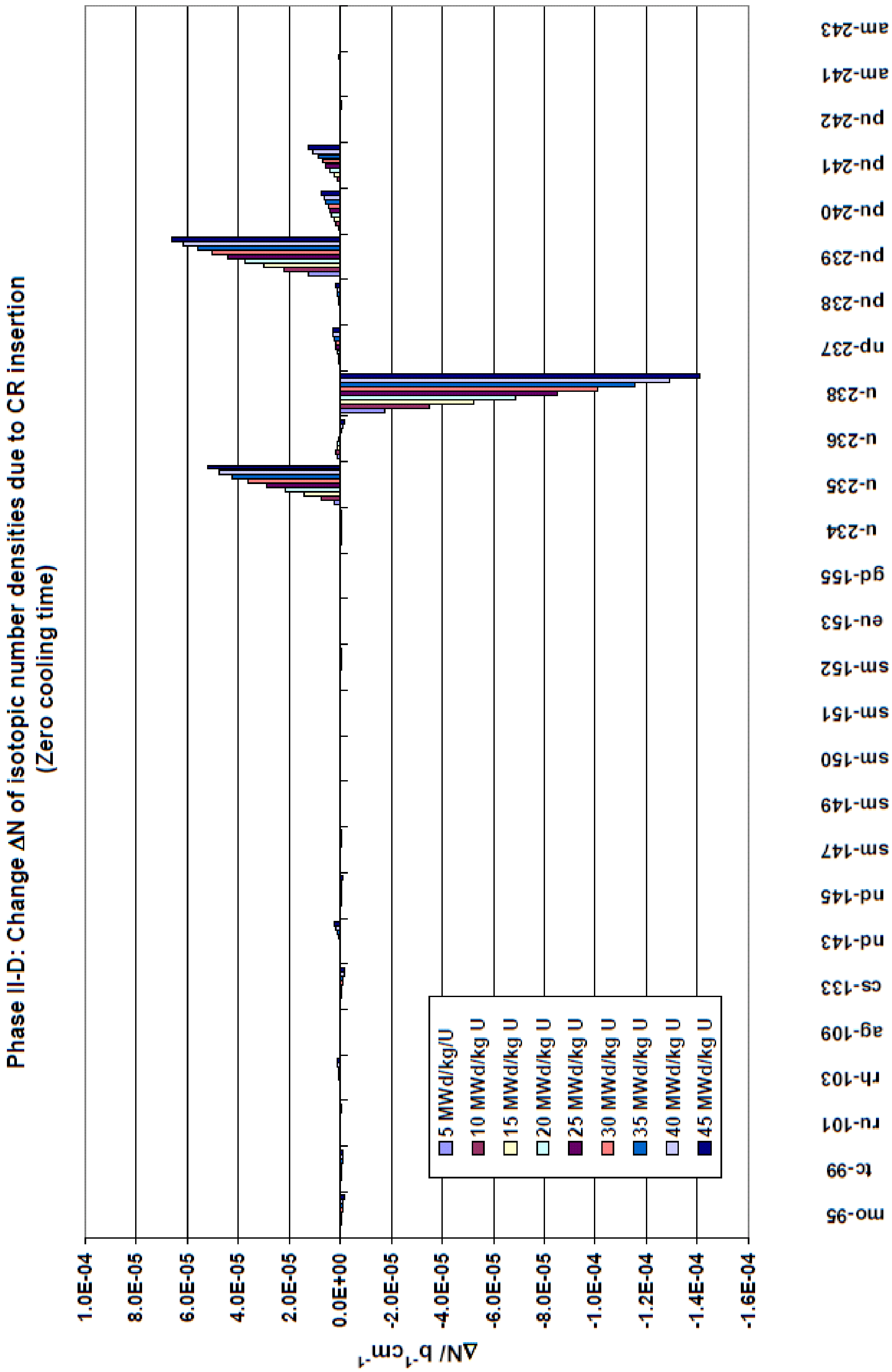


Figure 6.3: Phase II-C: Non-normalised axial fission density distribution typical of uniform burn-up distributions, [4], Appendix VI, Figure VI.5

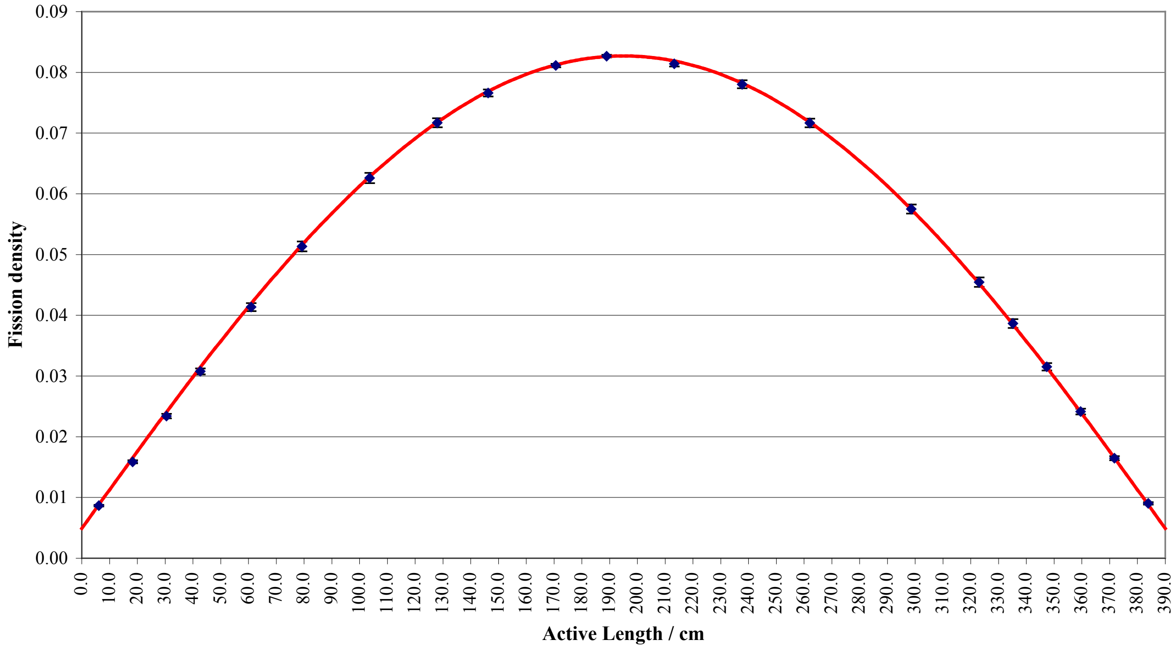


Figure 6.4: Phase II-C number densities and Phase II-E number densities for $d_{CR} = 0$ (Phase II-C: 4.0 wt.-% initial enrichment, 32 MWd/kg U burn-up, 5 years cooling time; Phase II-E: 4.0 wt.-% initial enrichment, 30 MWd/kg U burn-up, zero cooling time)

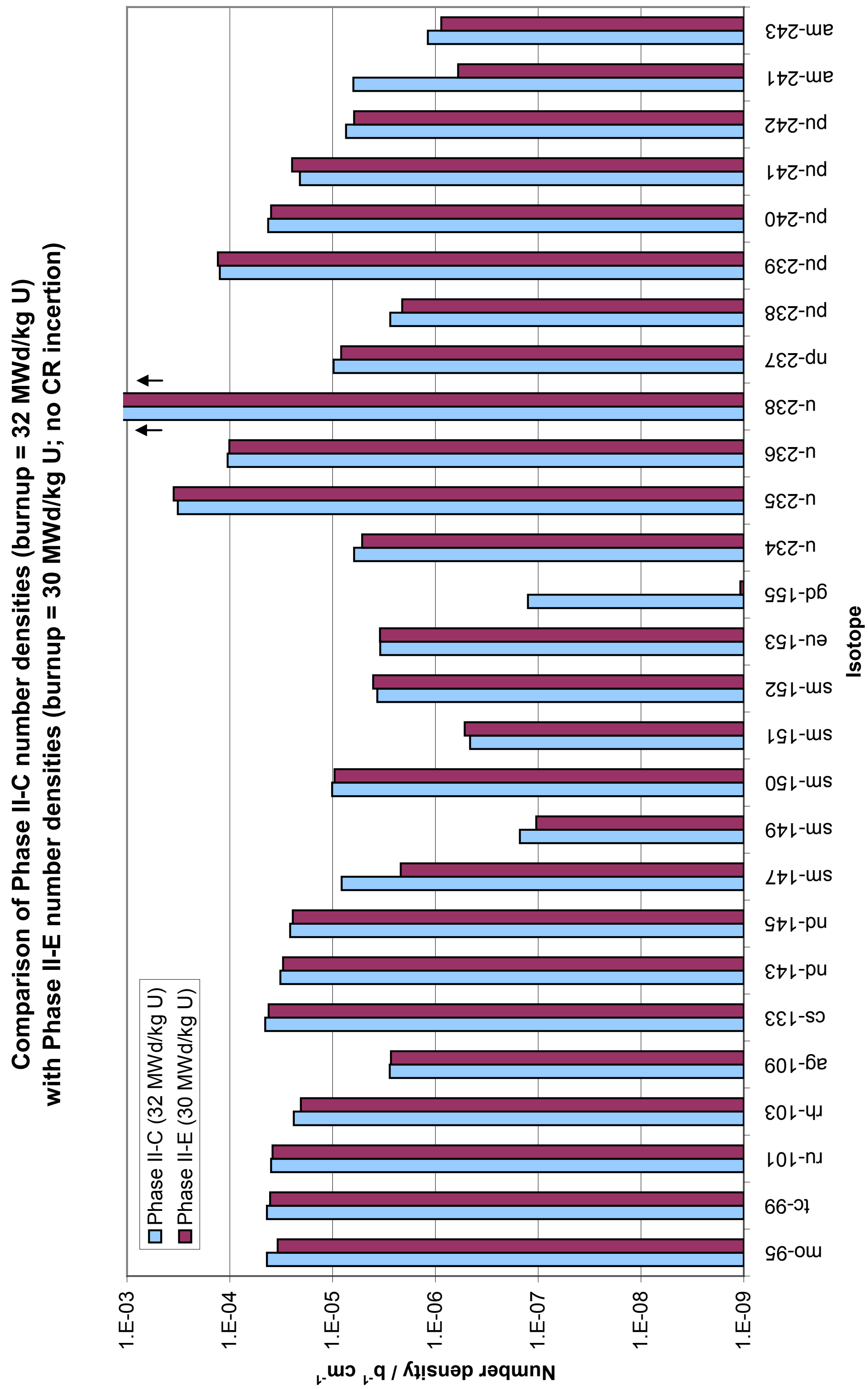


Figure 6.5: Phase II-C number densities and Phase II-E number densities for $d_{CR} = 0$ (Phase II-C: 4.0 wt.-% initial enrichment, 50 MWd/kg U burn-up, 5 years cooling time; Phase II-E: 4.0 wt.-% initial enrichment, 50 MWd/kg U burn-up, zero cooling time)

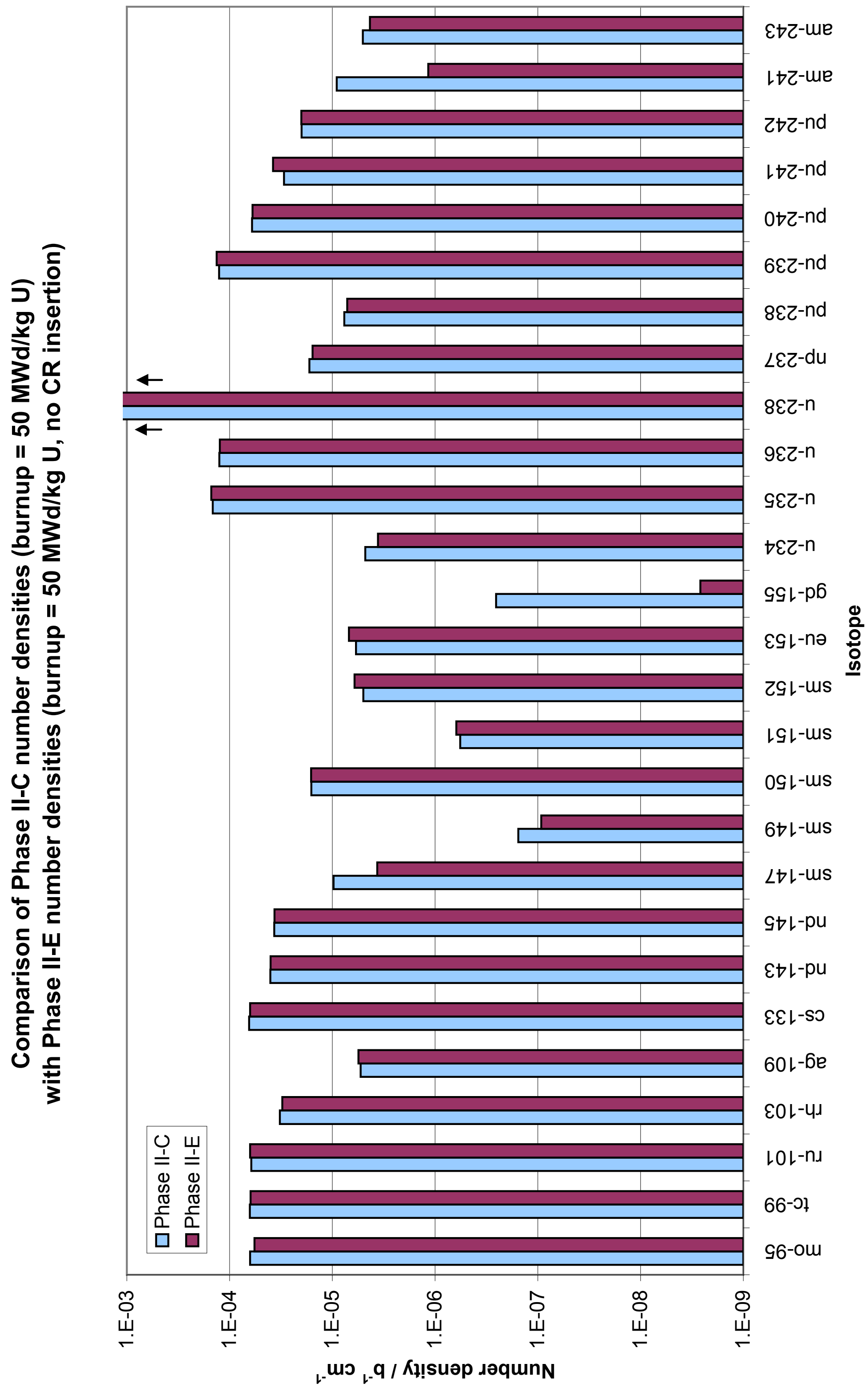


Figure 6.6: Phase II-C: End effect Δk as a function of the top end parameter S6, [4] Appendix VI, Figure VI.2

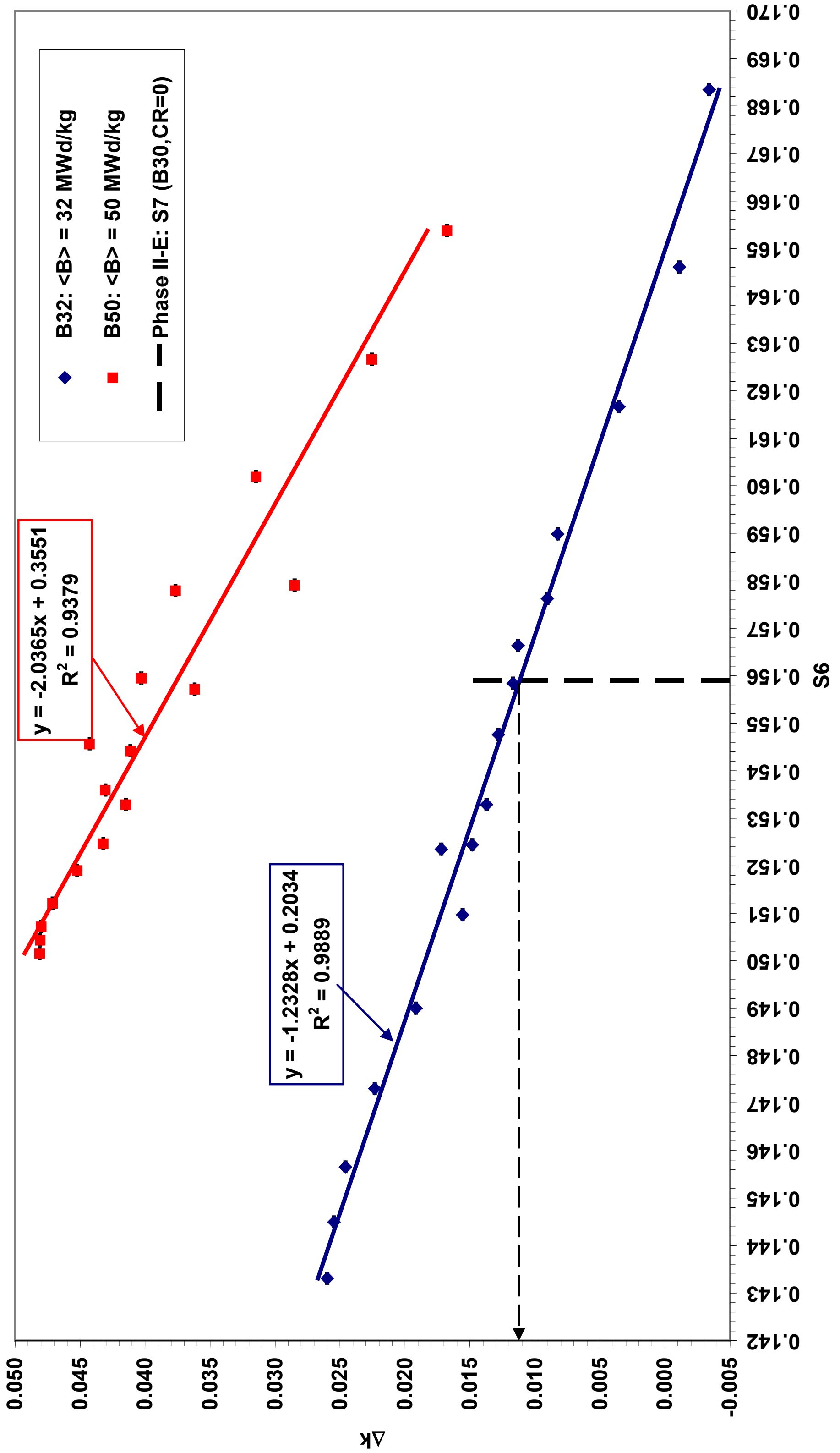


Figure 6.7: Phase II-C: End effect Δk as a function of S6 + g*(S13/S6), [4] Appendix VI, Figure VI.43

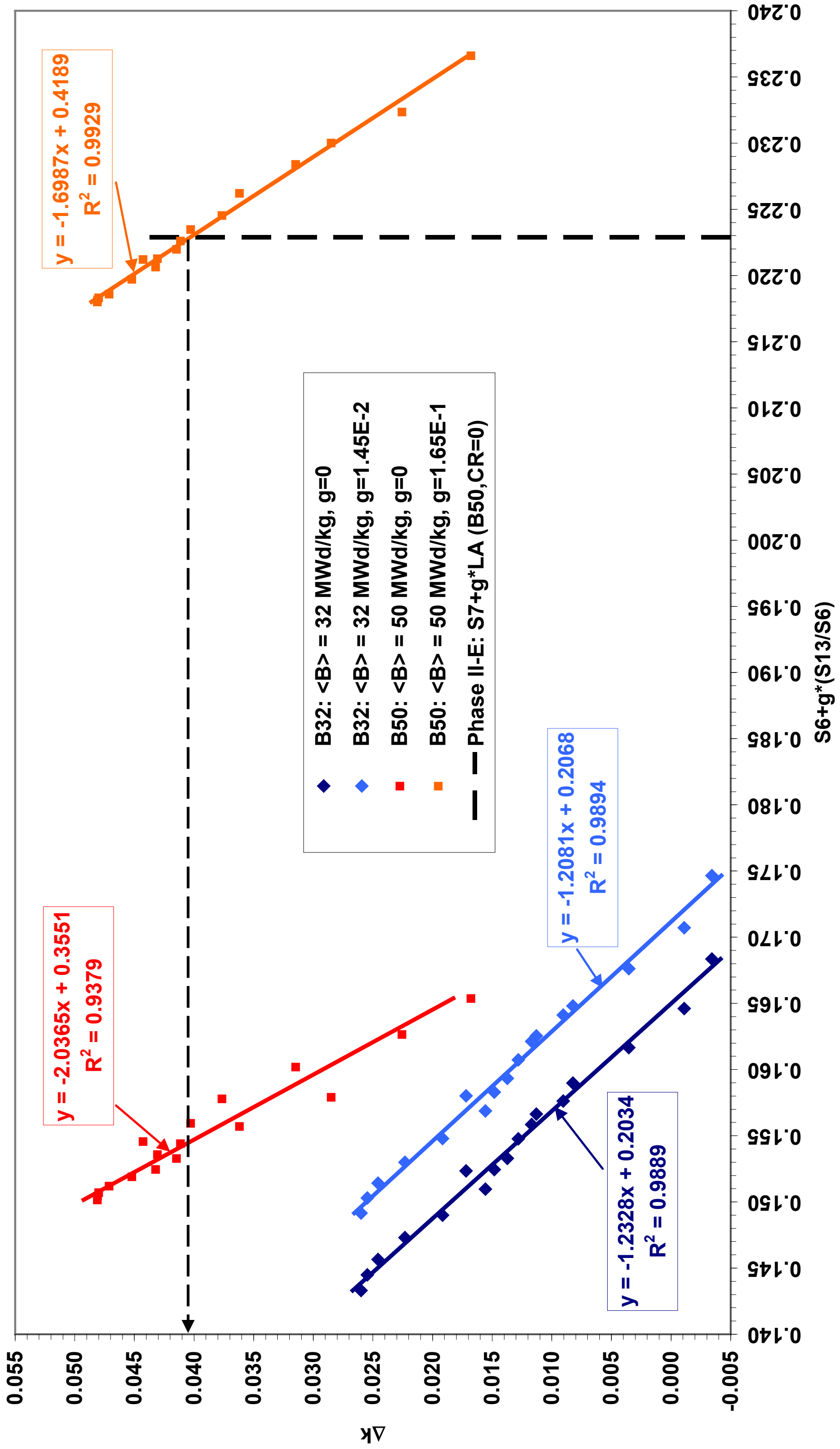


Figure 6.8: Phase II-C: Top end content C6 as a function of the top end parameter S6, [4] Appendix VI, Figure VI.24

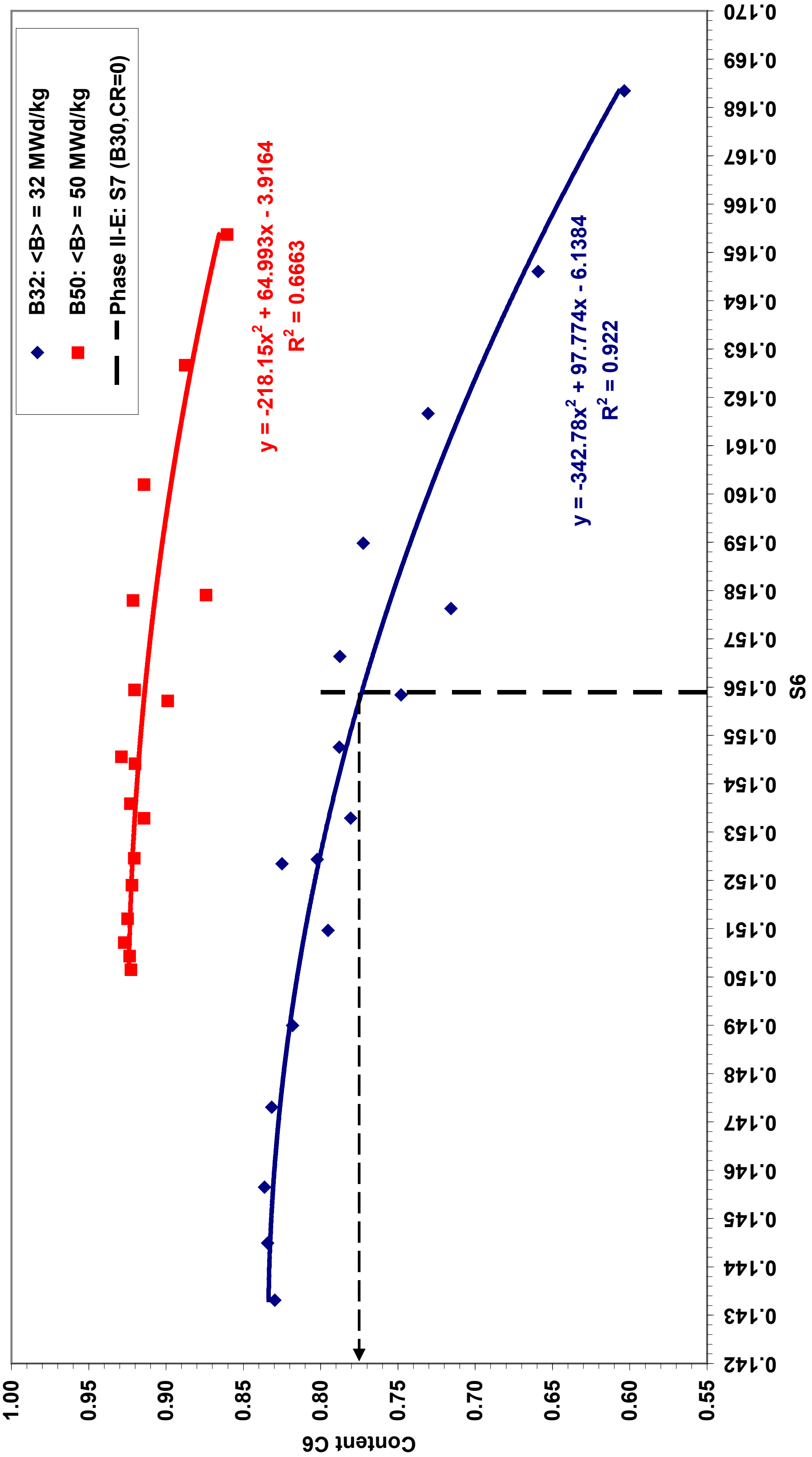


Figure 6.9: Phase II-C: End effect Δk as a function of the top end content C6, [4] Appendix VI, Figure VI.34: Prediction of the end effect Δk

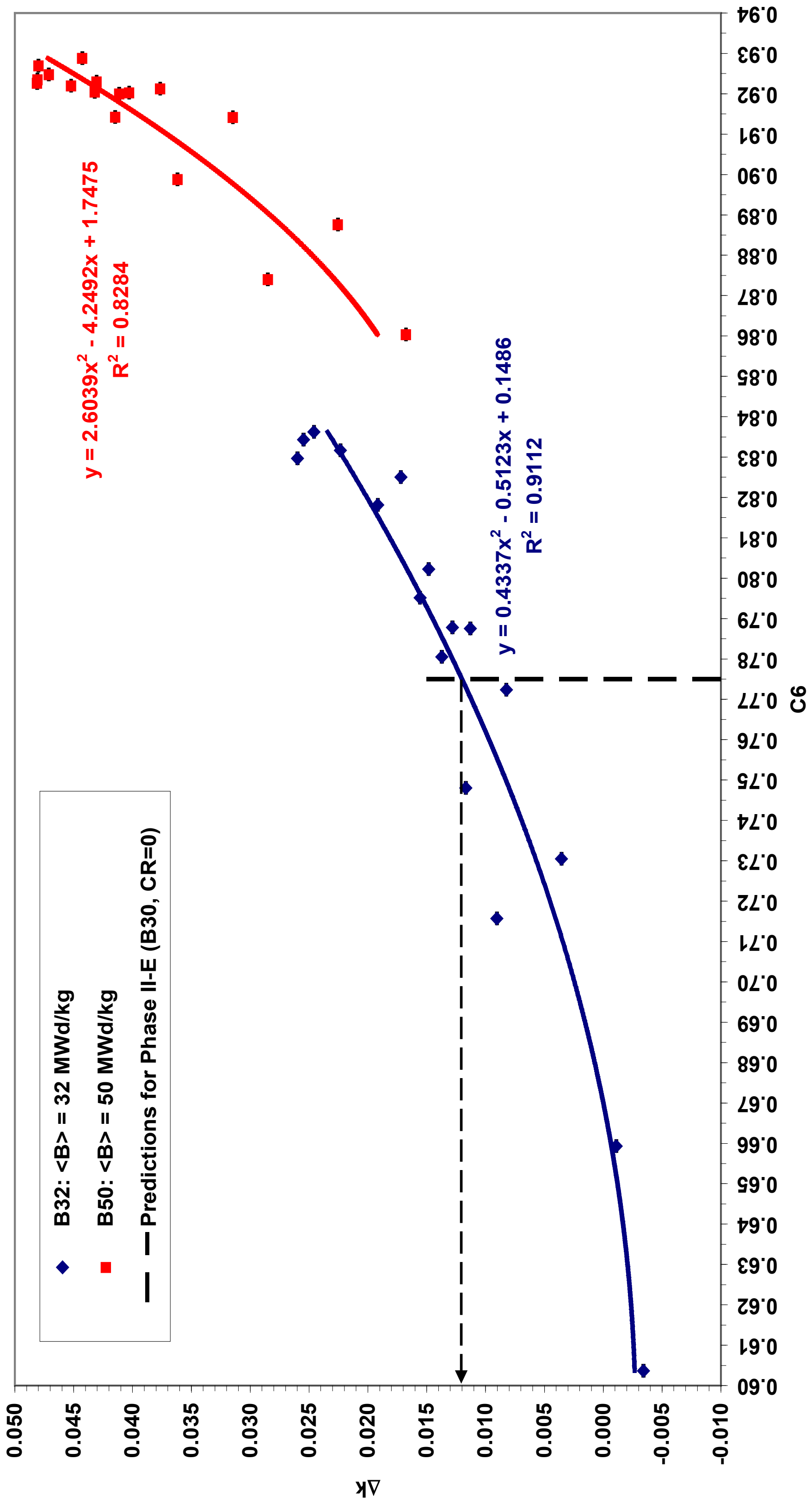


Figure 6.10: Phase II-C: End effect Δk as a function of the top end content C6, [4] Appendix VI, Figure VI.34: Prediction of the top end contents

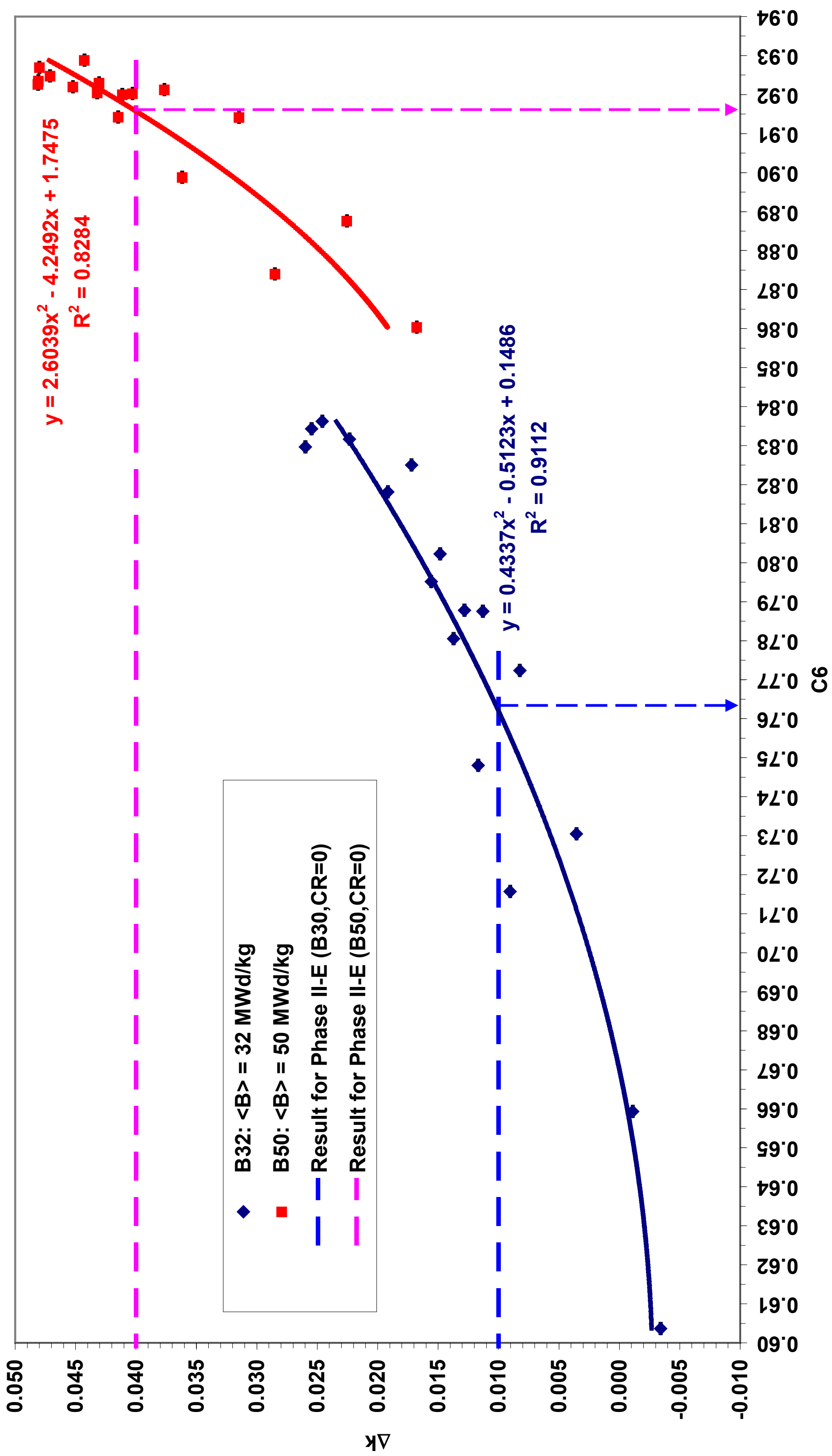


Figure 8.1: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Neutron multiplication factors k_{eff} (see Table 8.1)

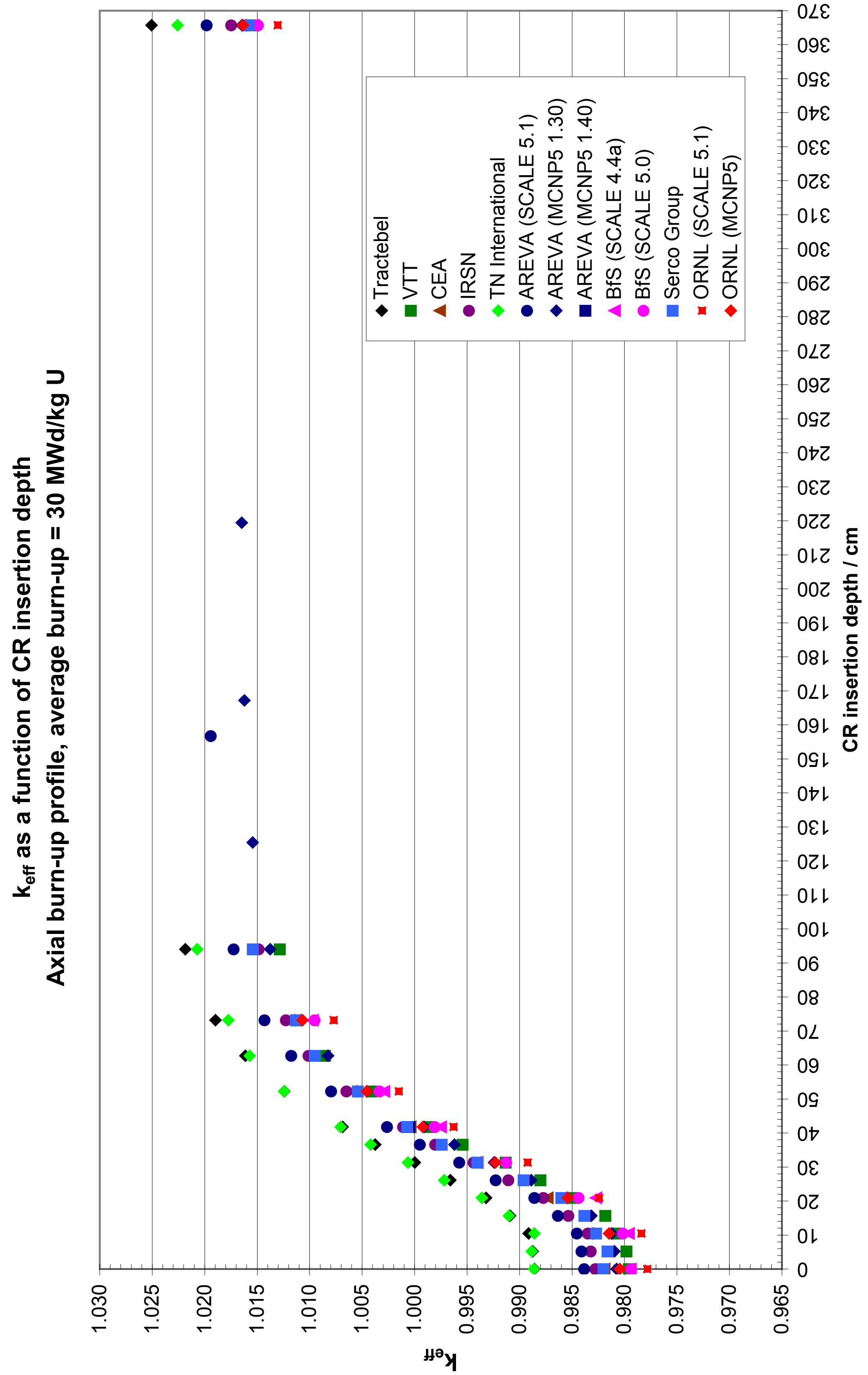


Figure 8.2: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Neutron multiplication factors k_{eff} (see Table 8.3)

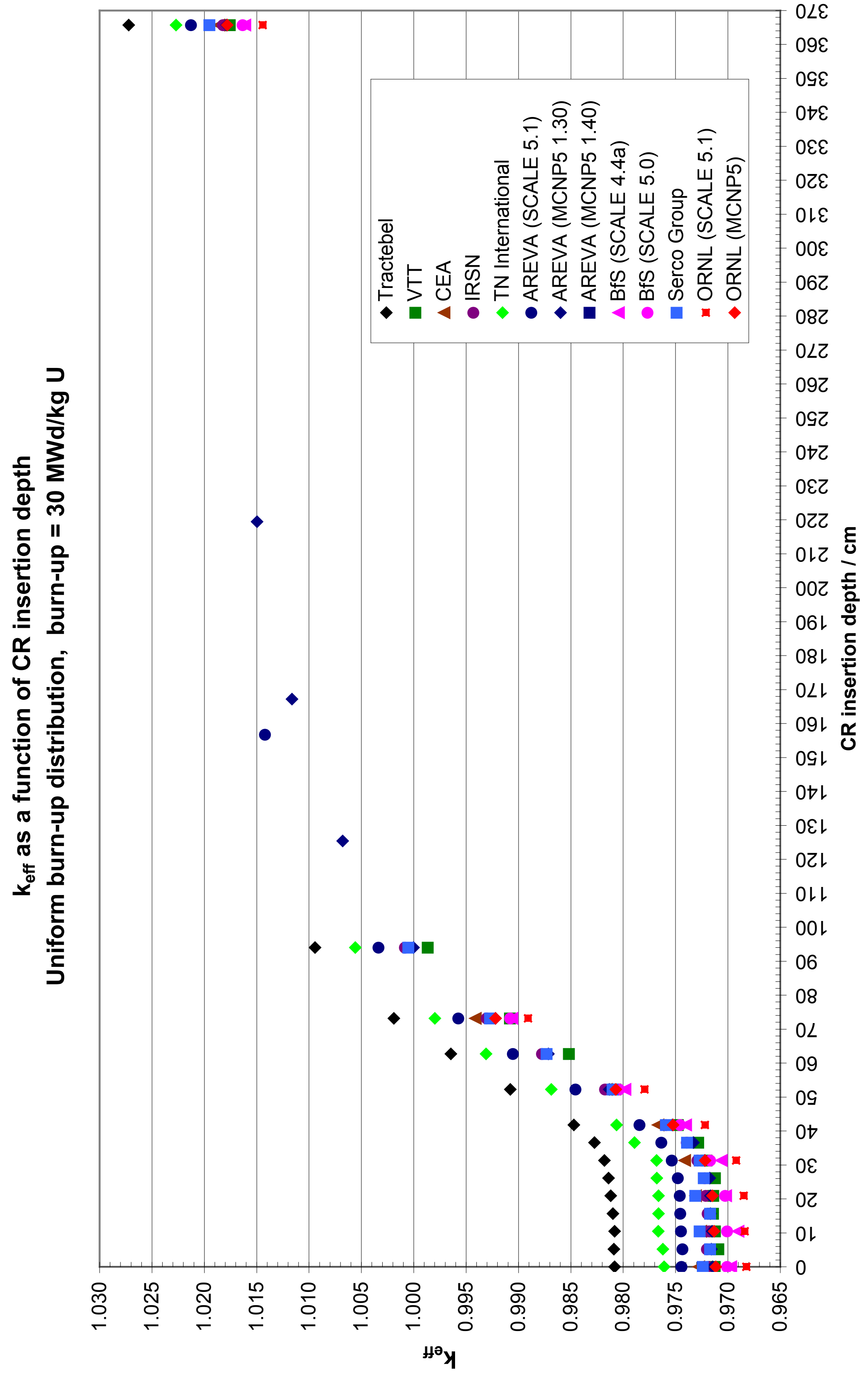


Figure 8.3: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Neutron multiplication factors k_{eff} (see Table 8.5)

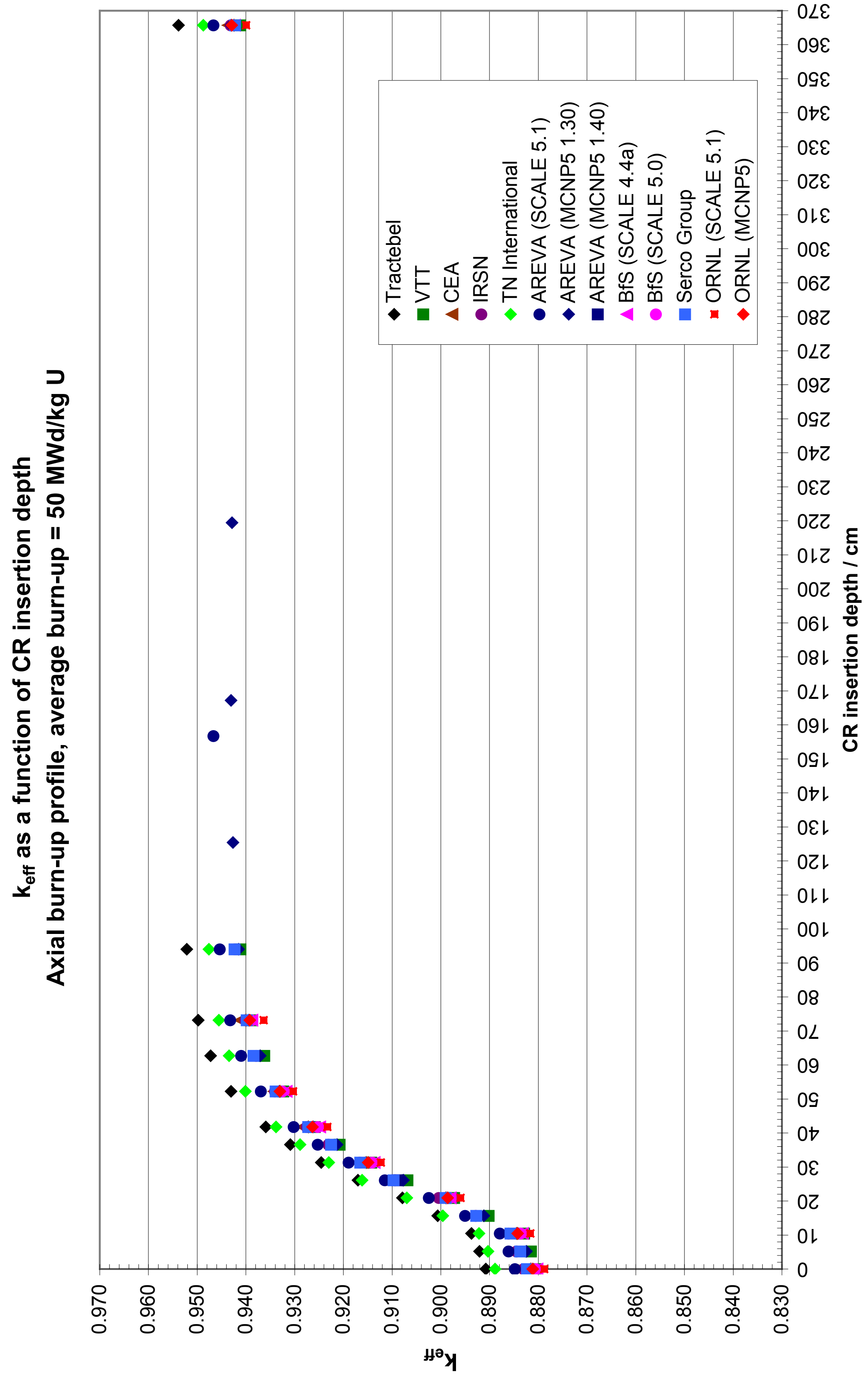


Figure 8.4: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Neutron multiplication factors k_{eff} (see Table 8.7)

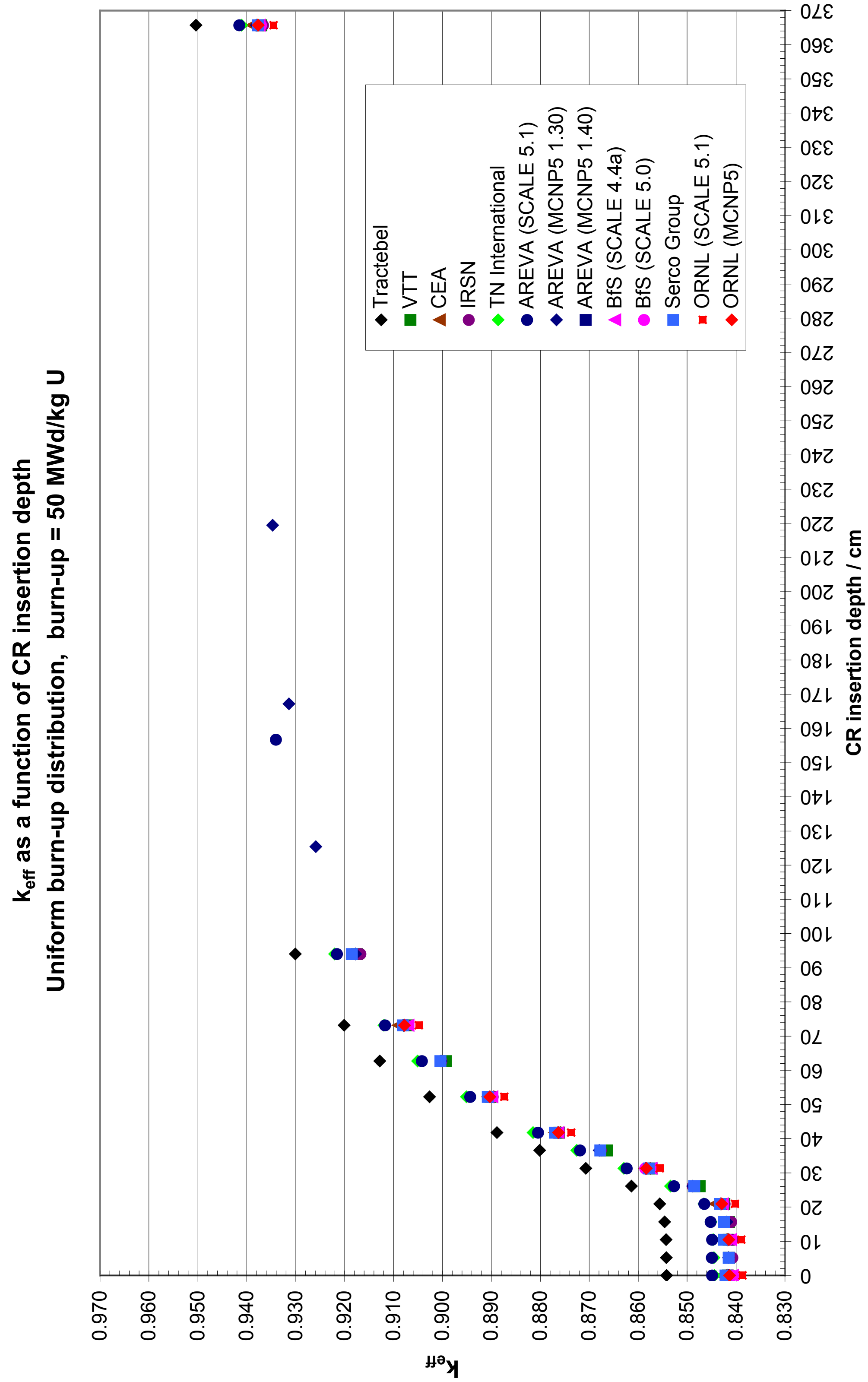


Figure 8.5: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.9)

Figure 8.5a

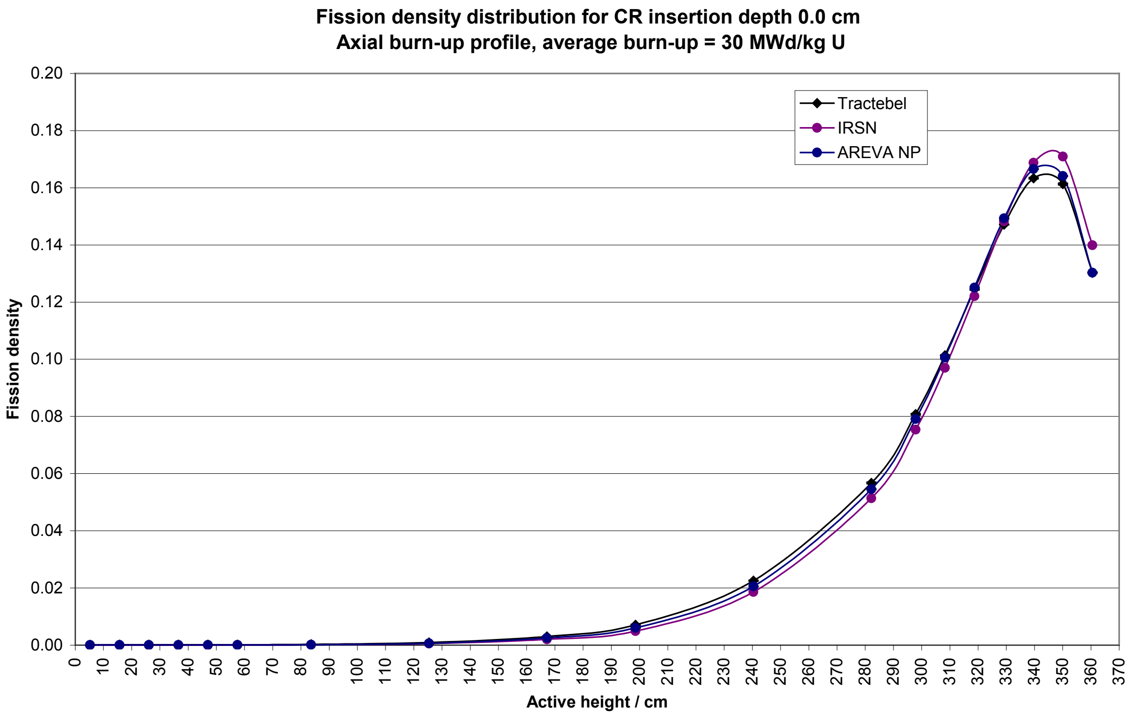


Figure 8.5b

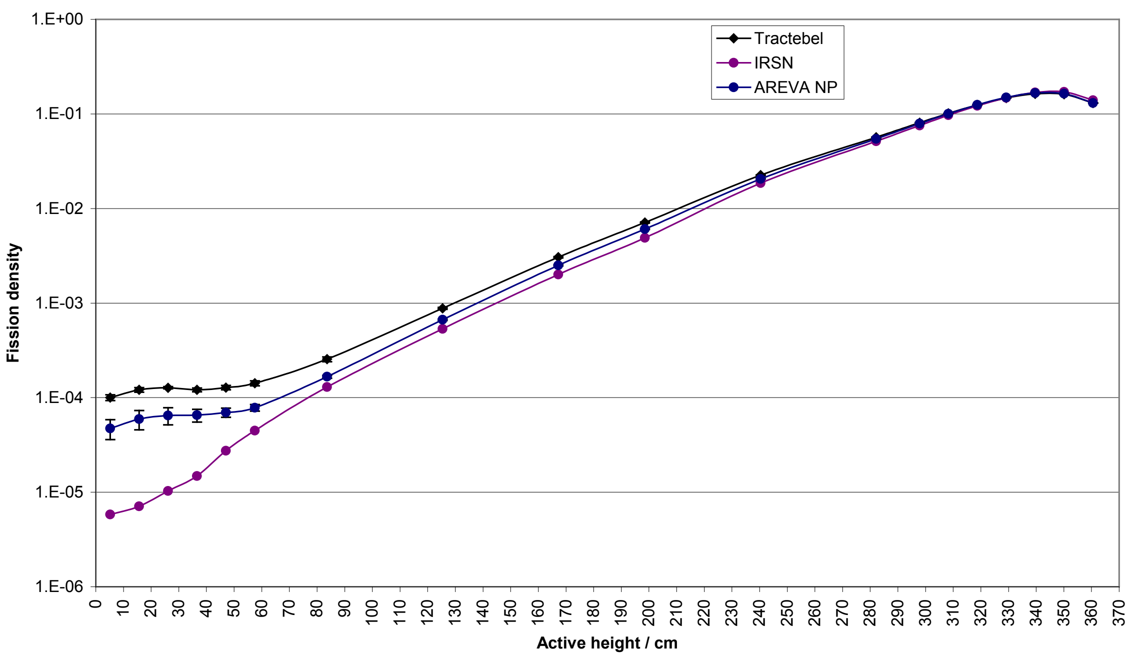


Figure 8.6: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.10)

Figure 8.6a

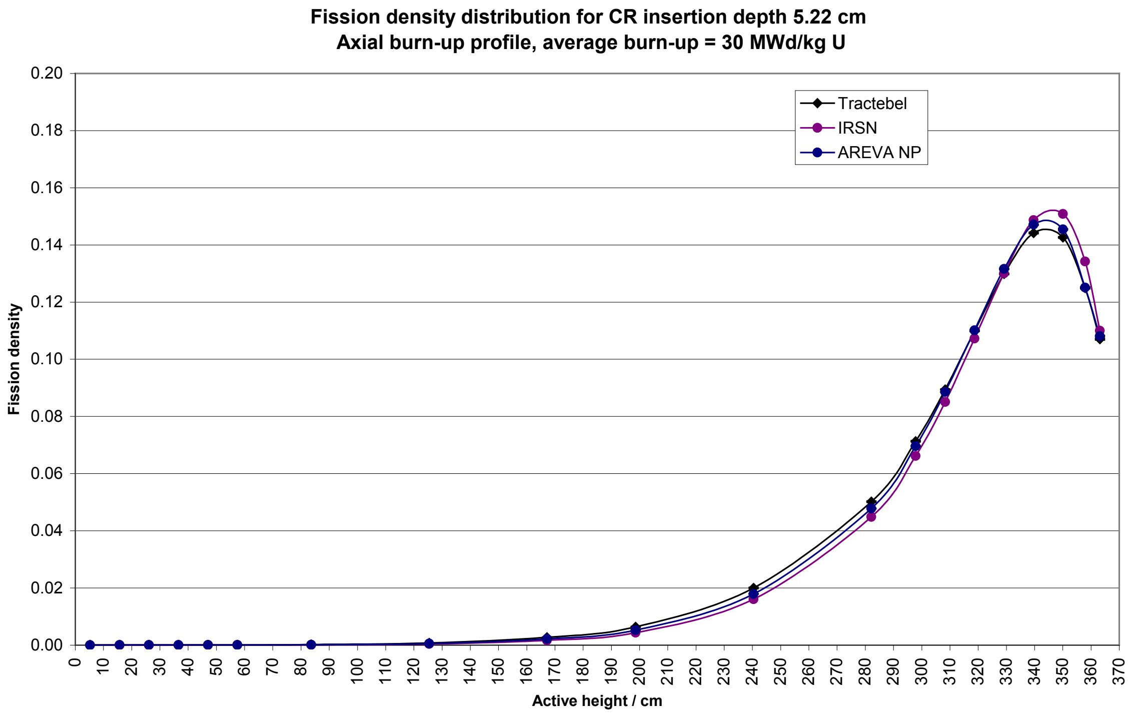


Figure 8.6b

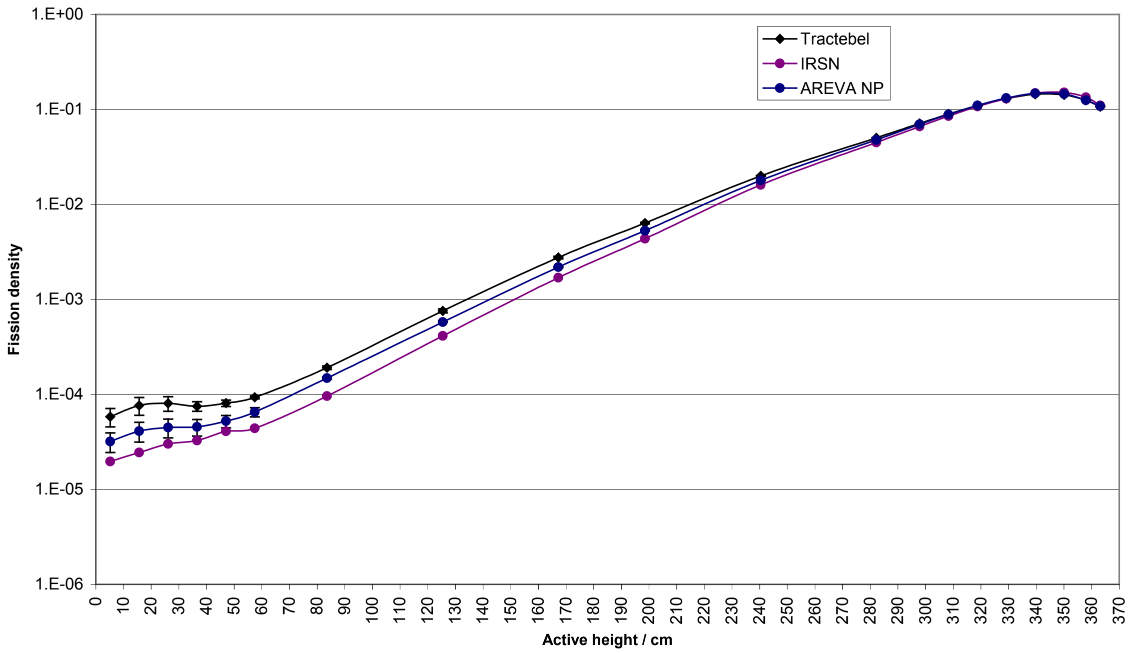


Figure 8.7: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.11)

Figure 8.7a

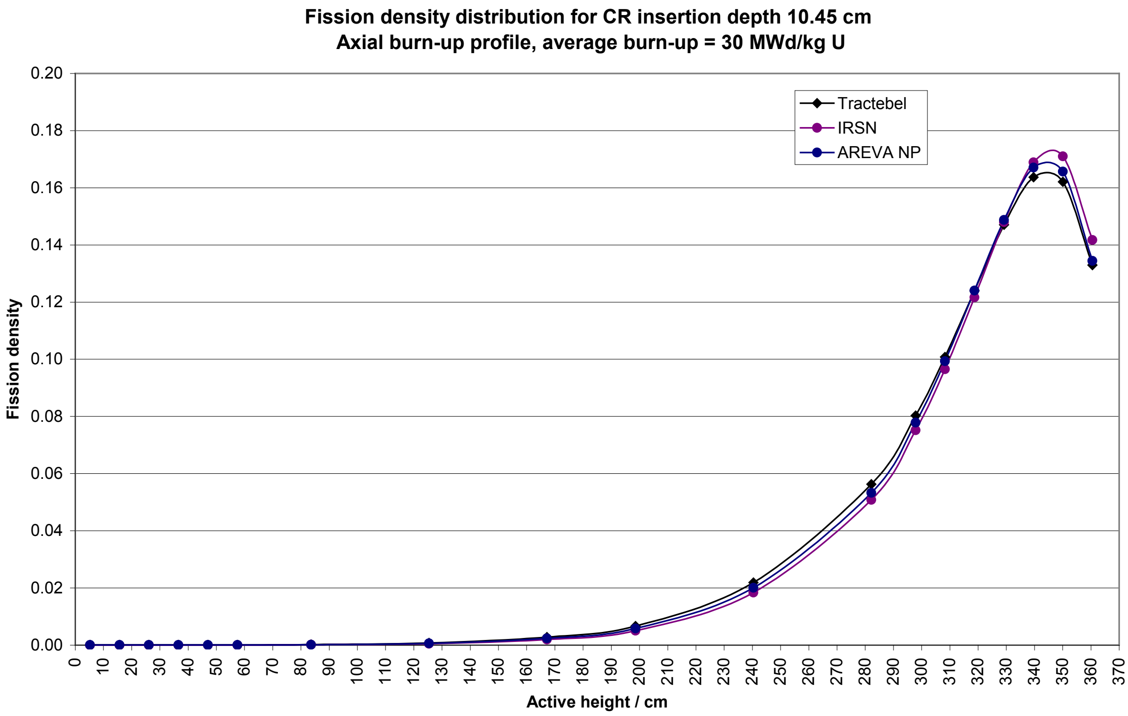


Figure 8.7b

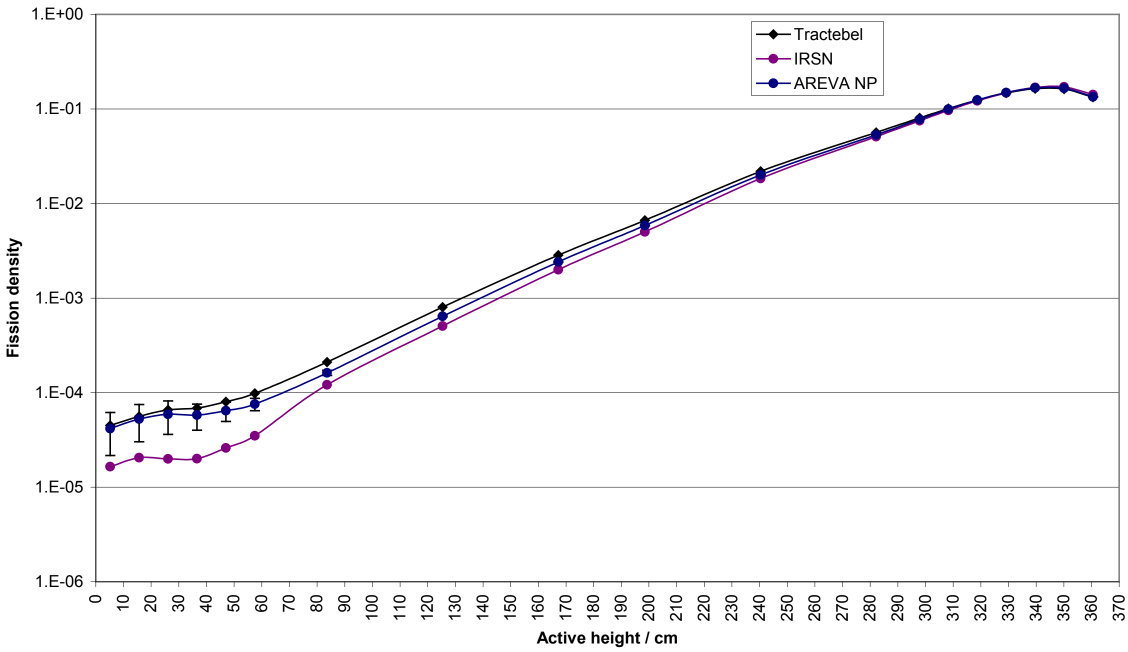


Figure 8.8: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.12)

Figure 8.8a

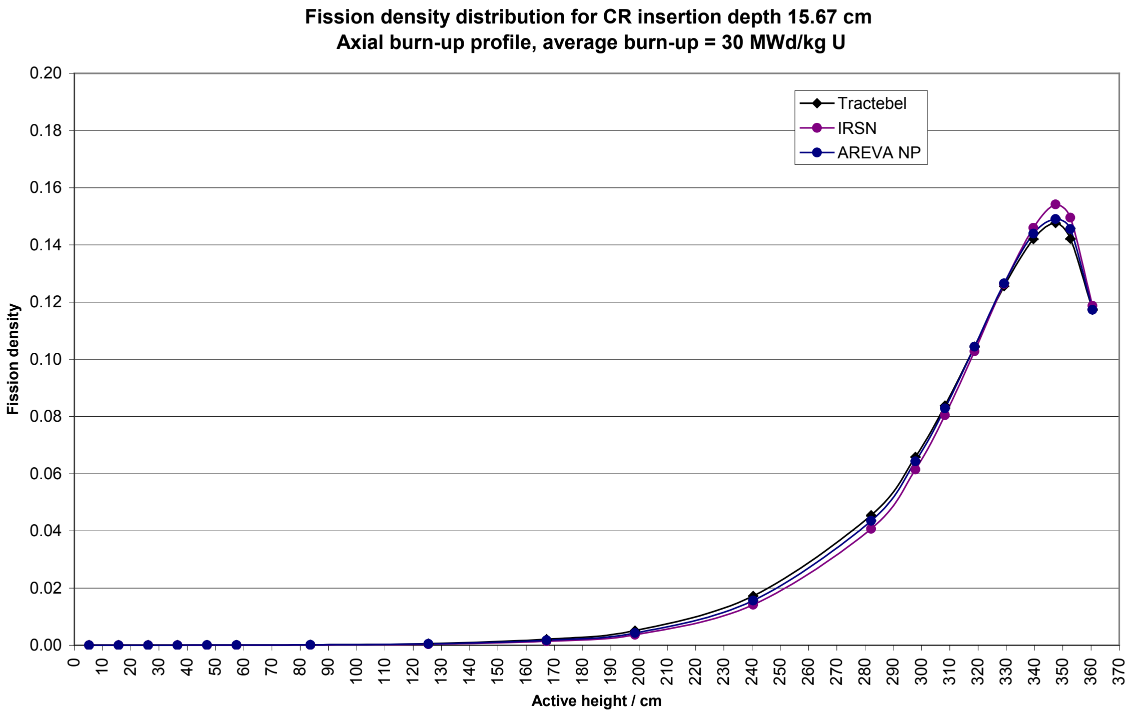


Figure 8.8b

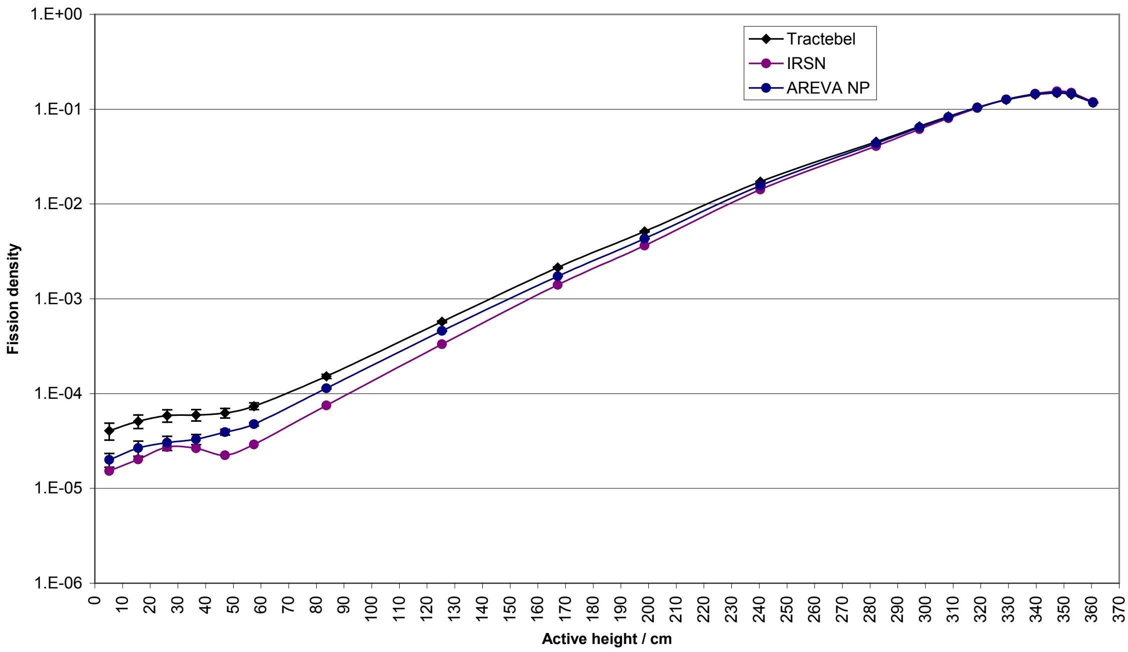


Figure 8.9: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.13)

Figure 8.9a

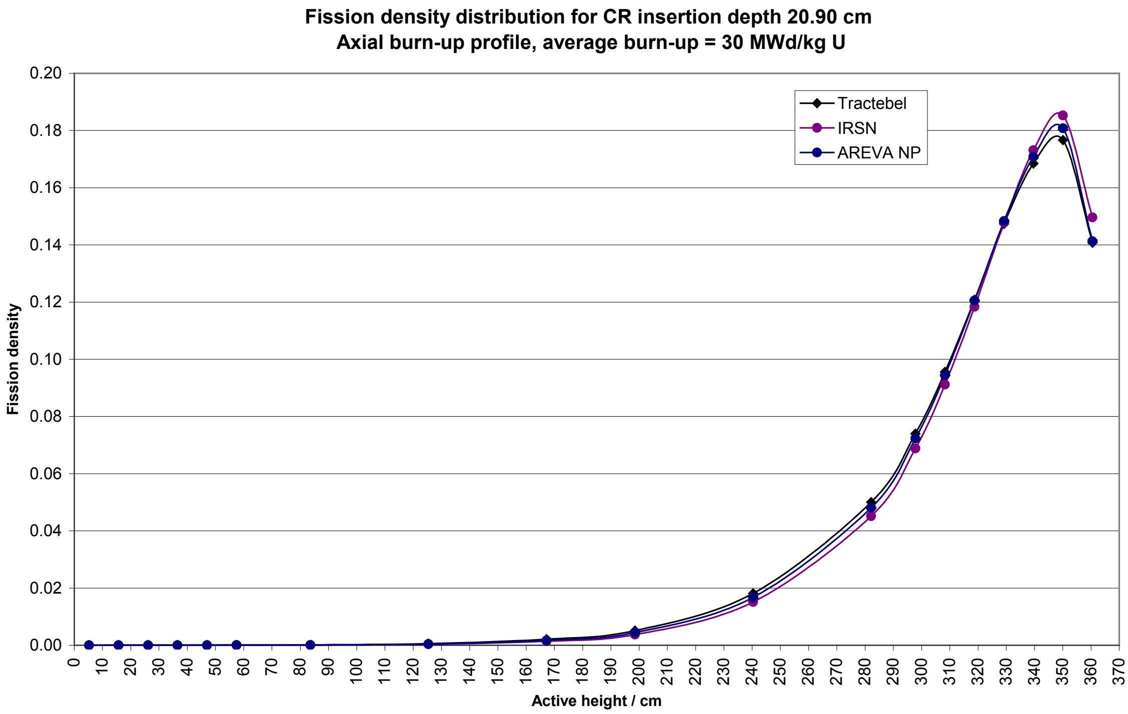


Figure 8.9b

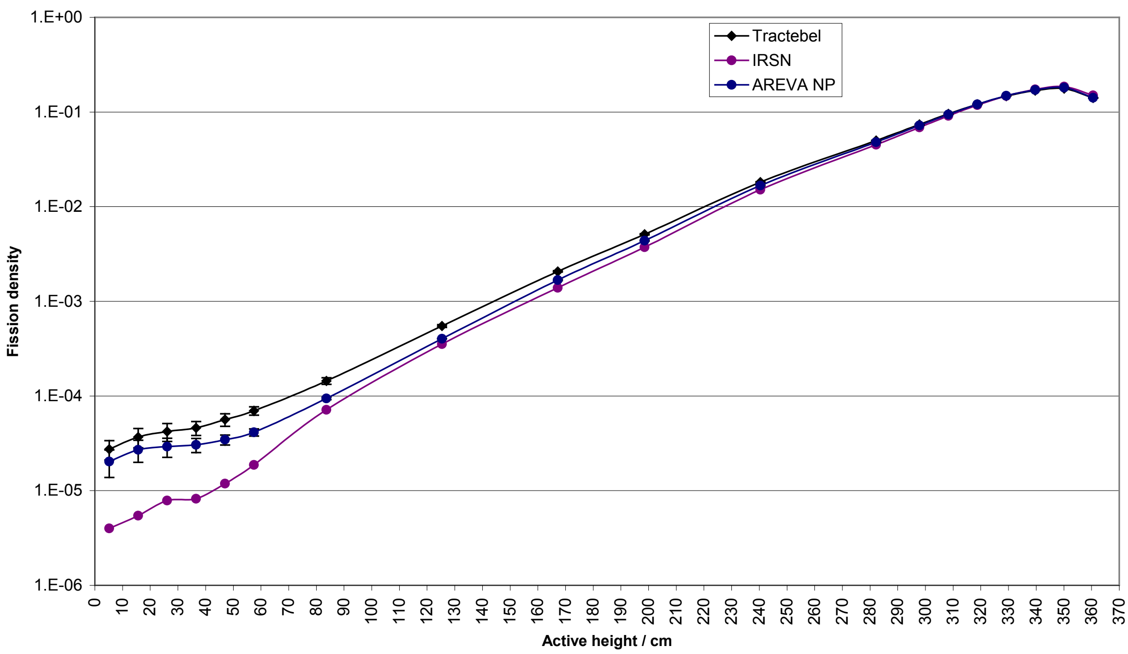


Figure 8.10: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.14)

Figure 8.10a

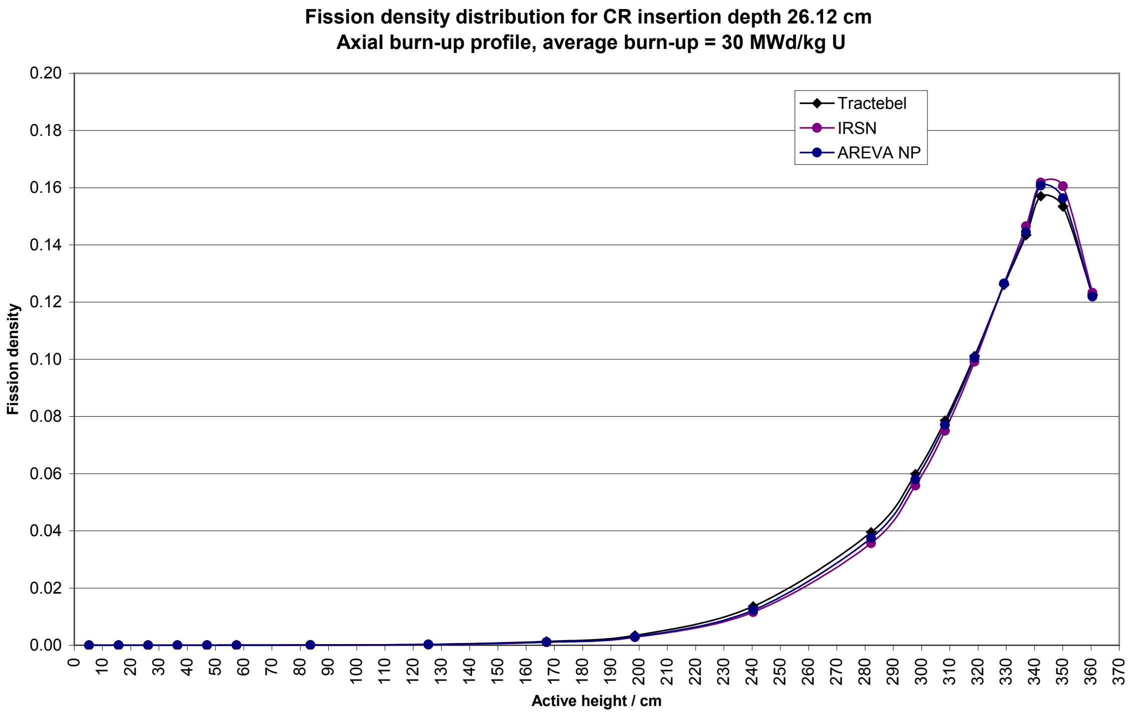


Figure 8.10b

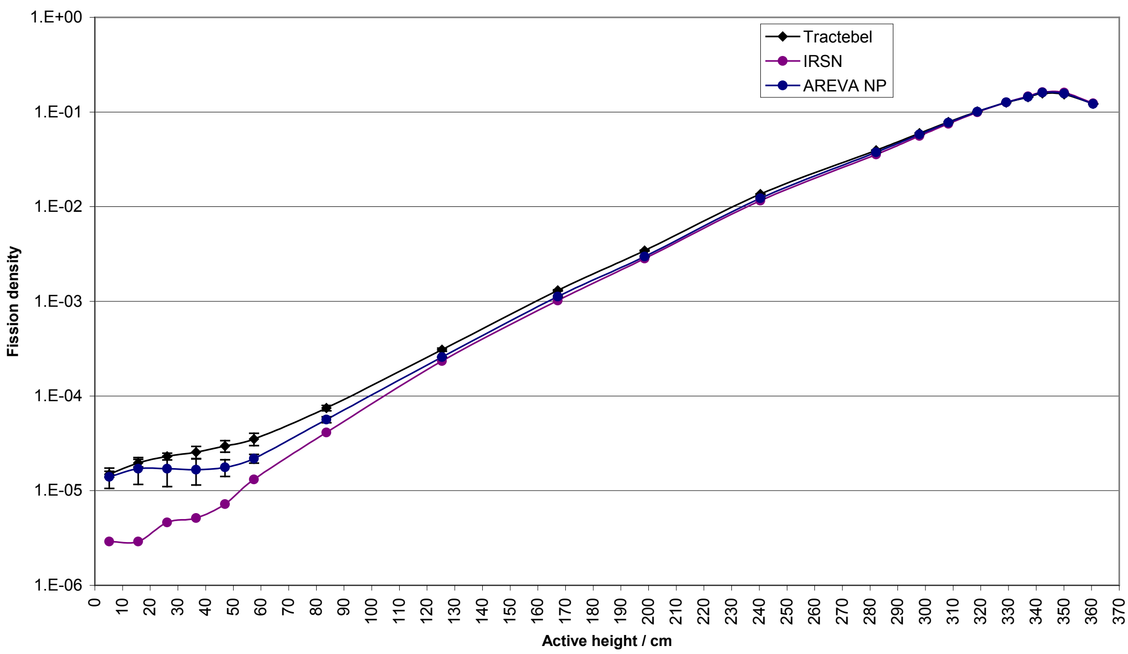


Figure 8.11: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.15)

Figure 8.11a

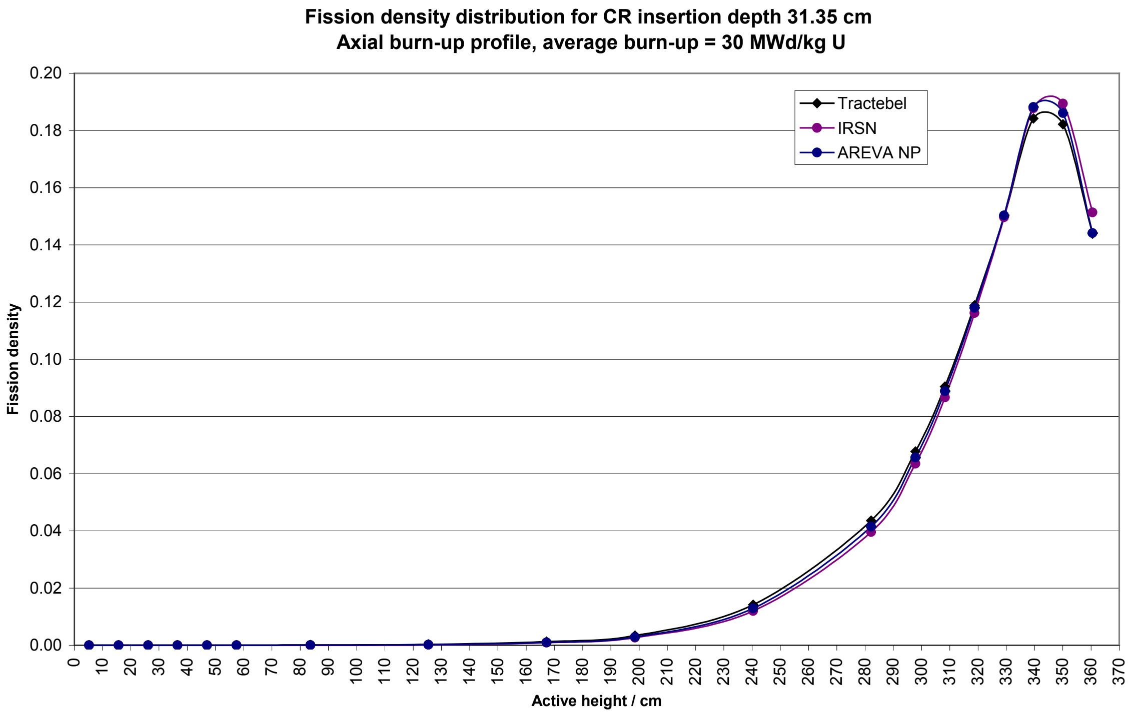


Figure 8.11b

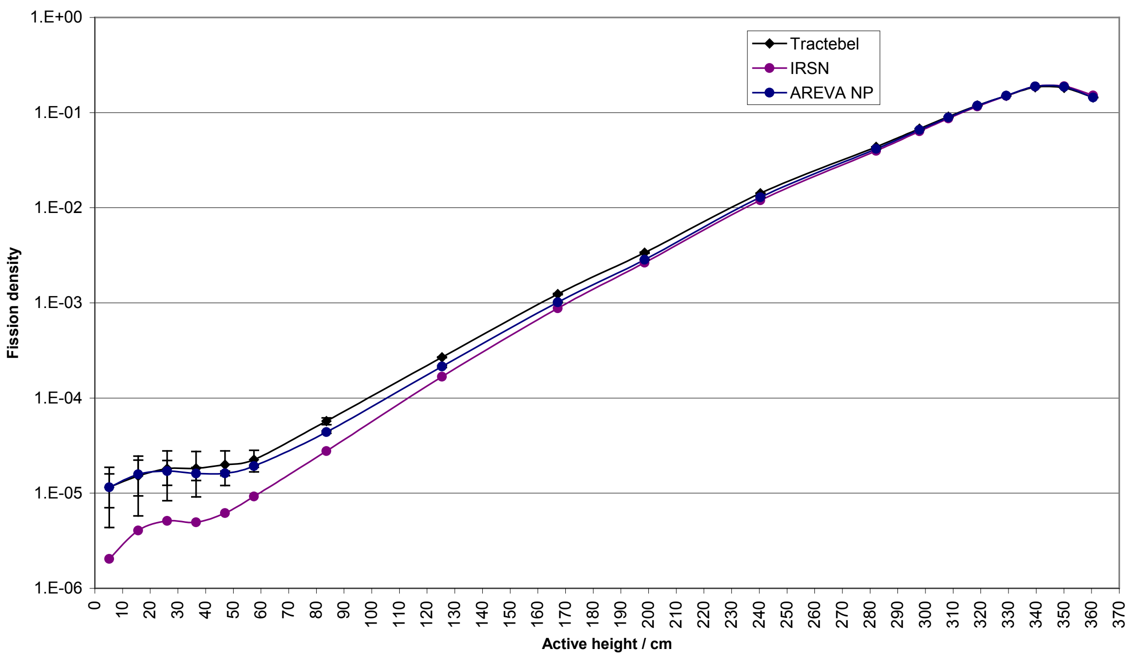


Figure 8.12: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.16)

Figure 8.12a

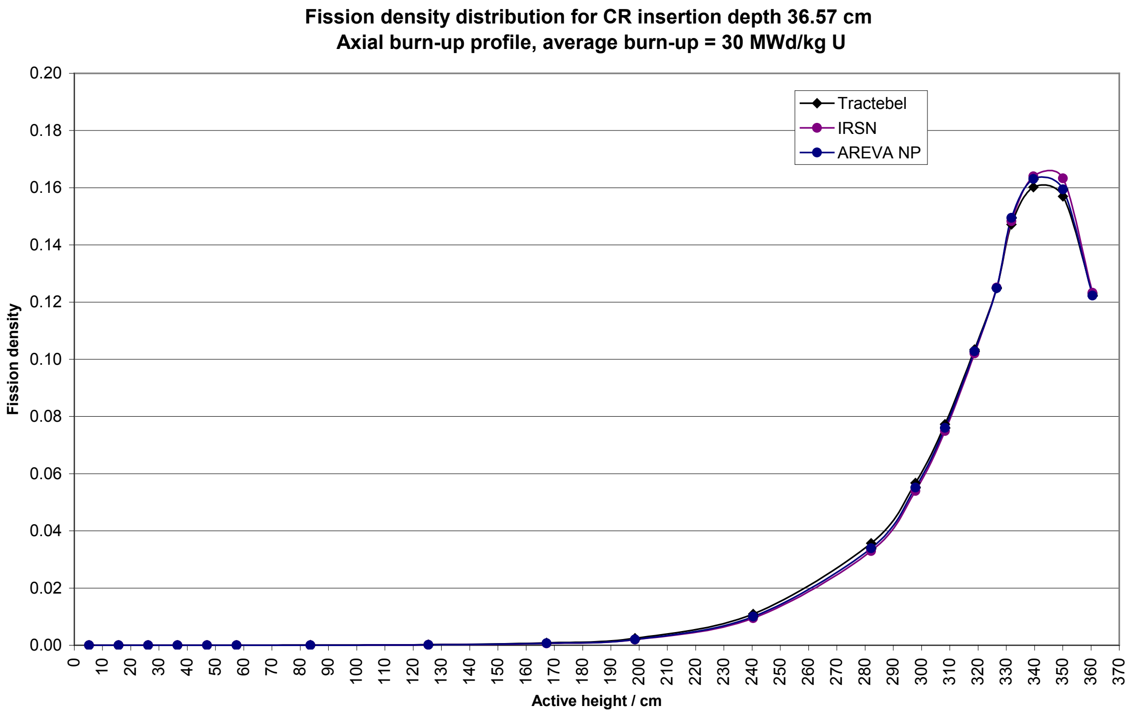


Figure 8.12b

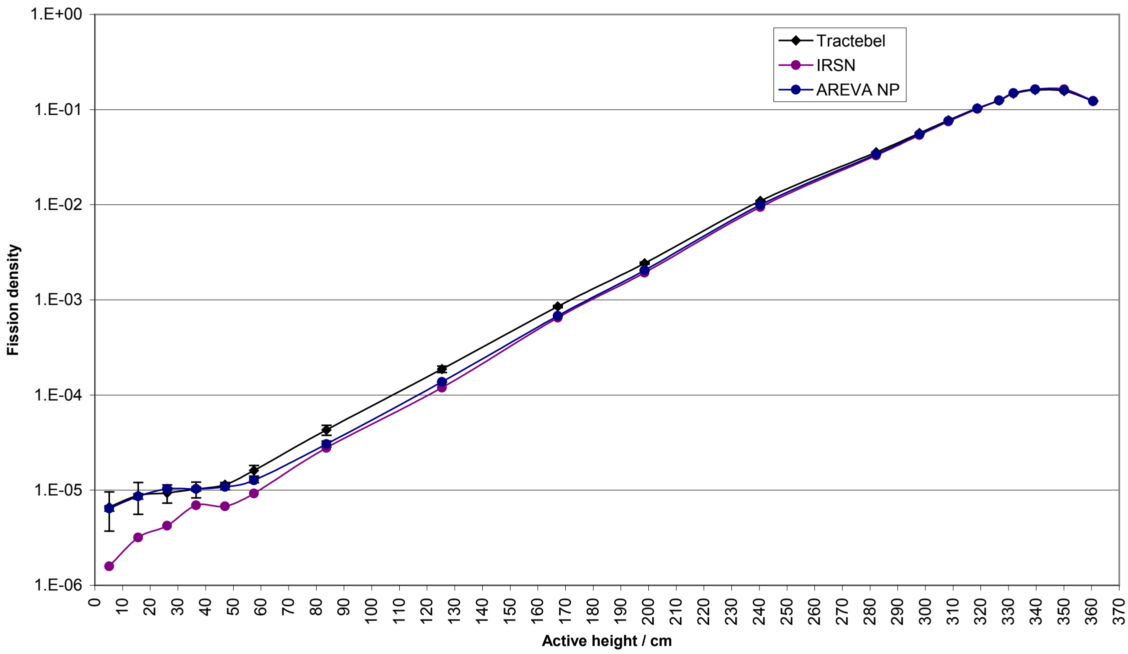


Figure 8.13: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.17)

Figure 8.13a

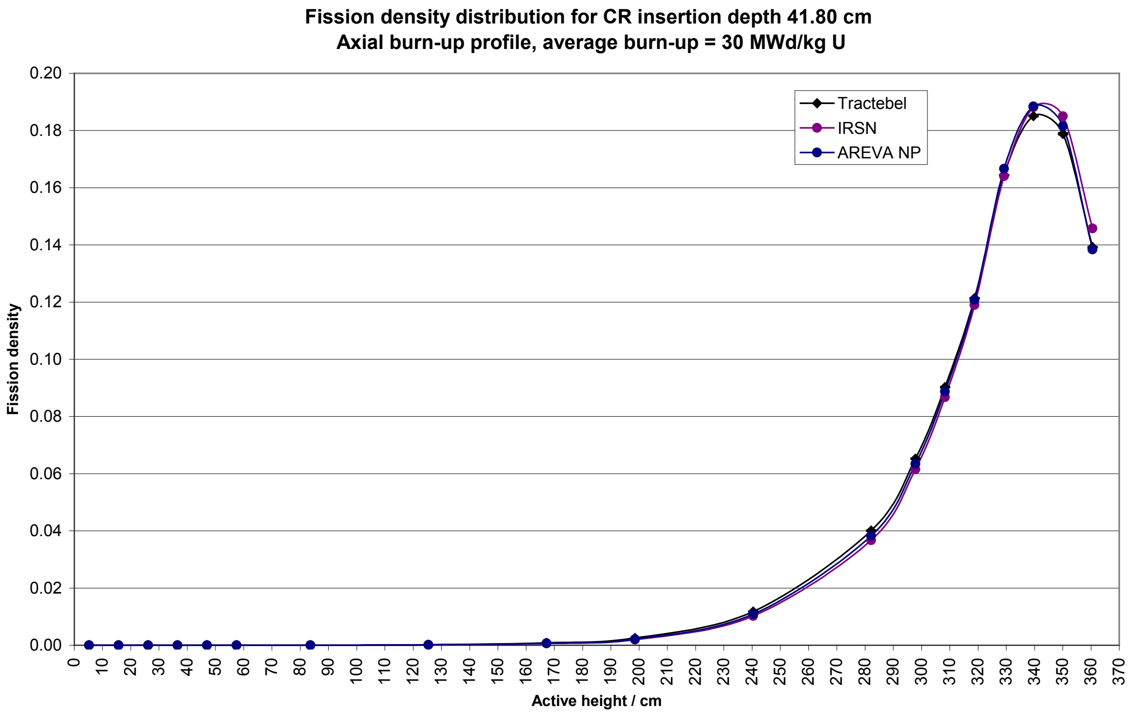


Figure 8.13b

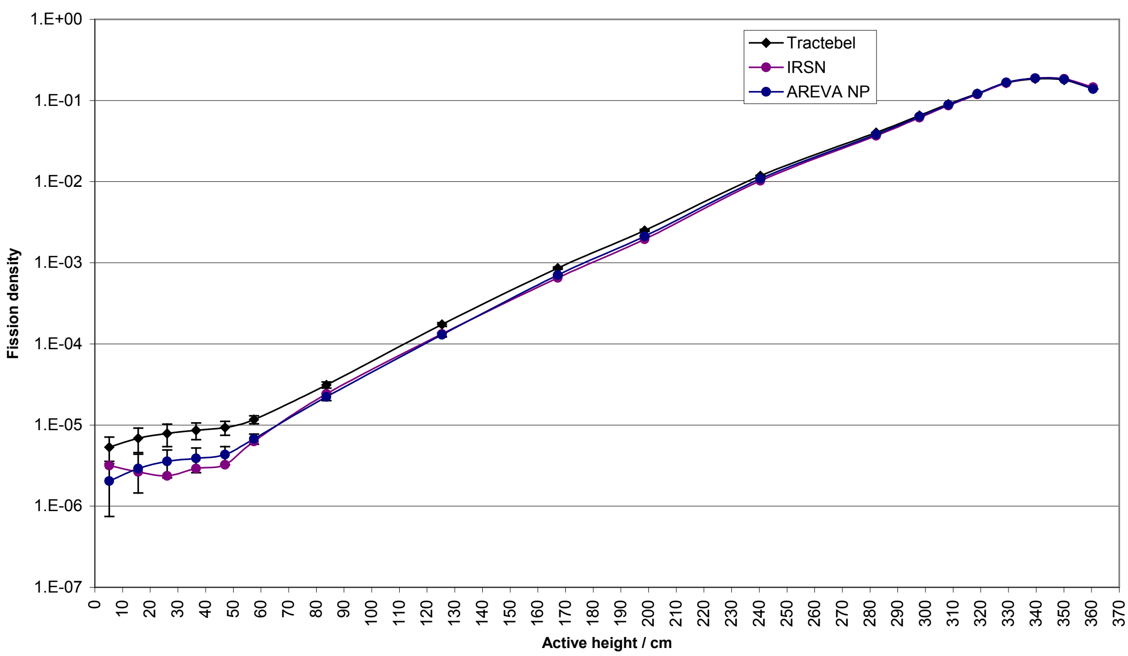


Figure 8.14: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.18)

Figure 8.14a

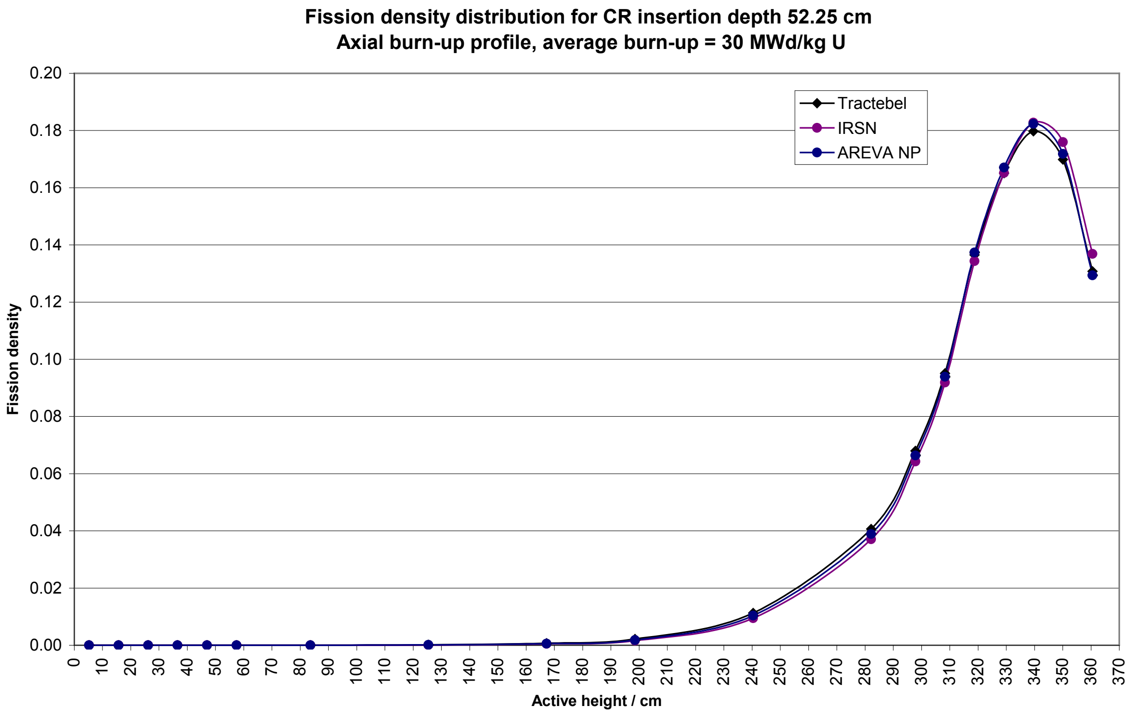


Figure 8.14b

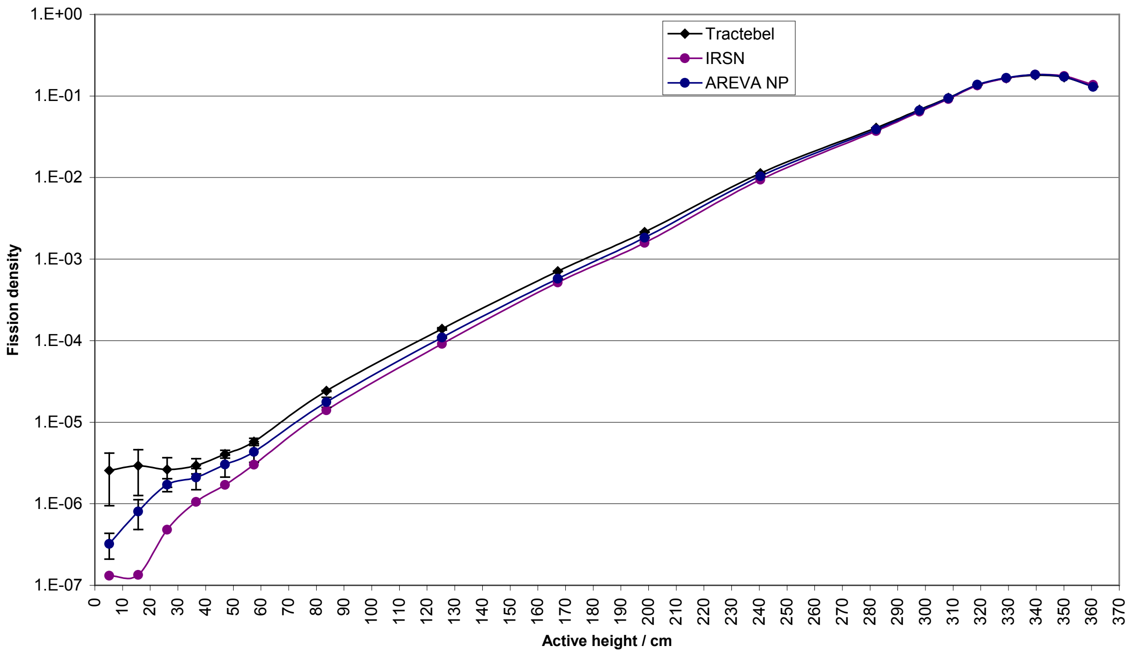


Figure 8.15: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.19)

Figure 8.15a

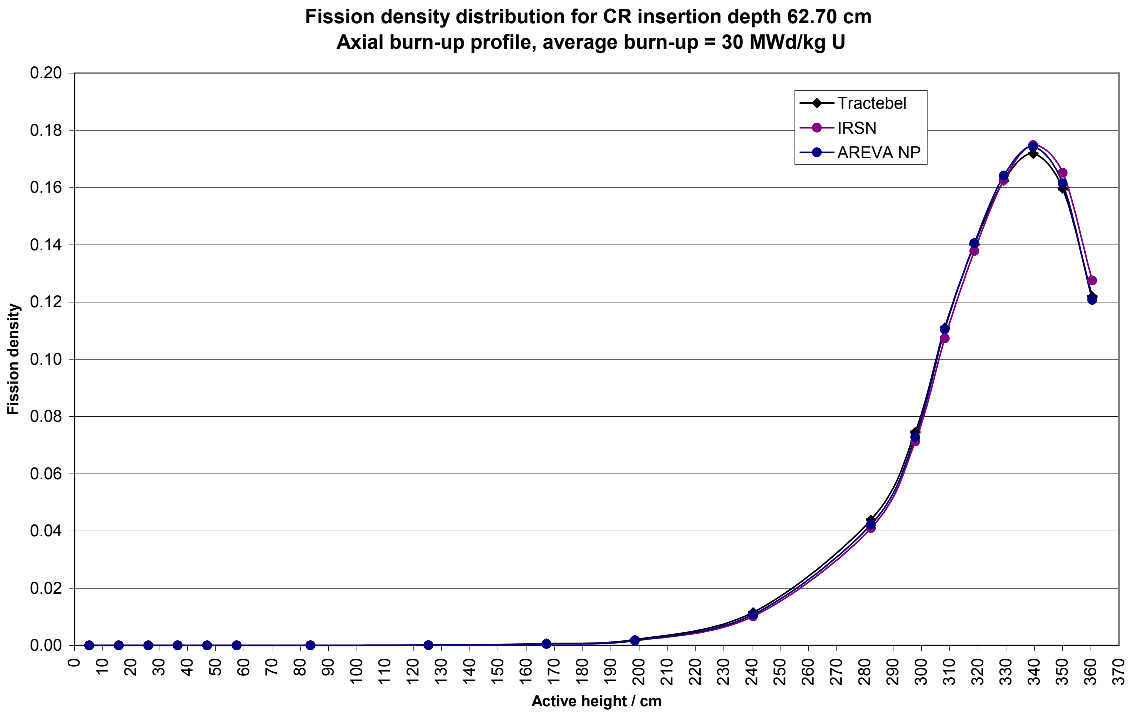


Figure 8.15b

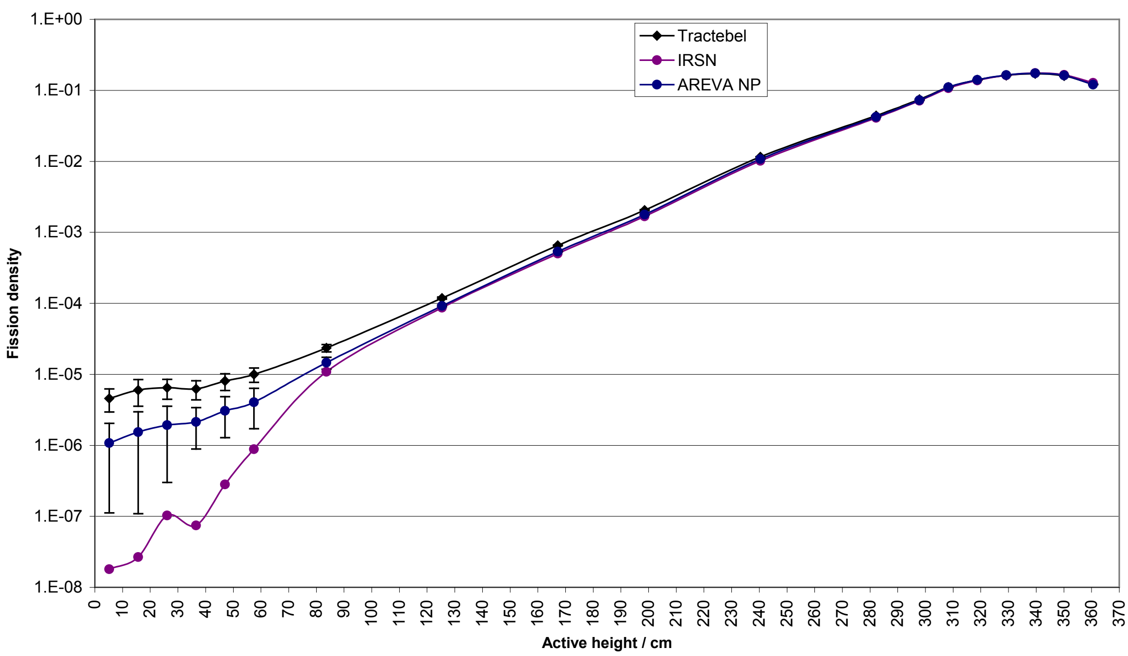


Figure 8.16: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.20)

Figure 8.16a

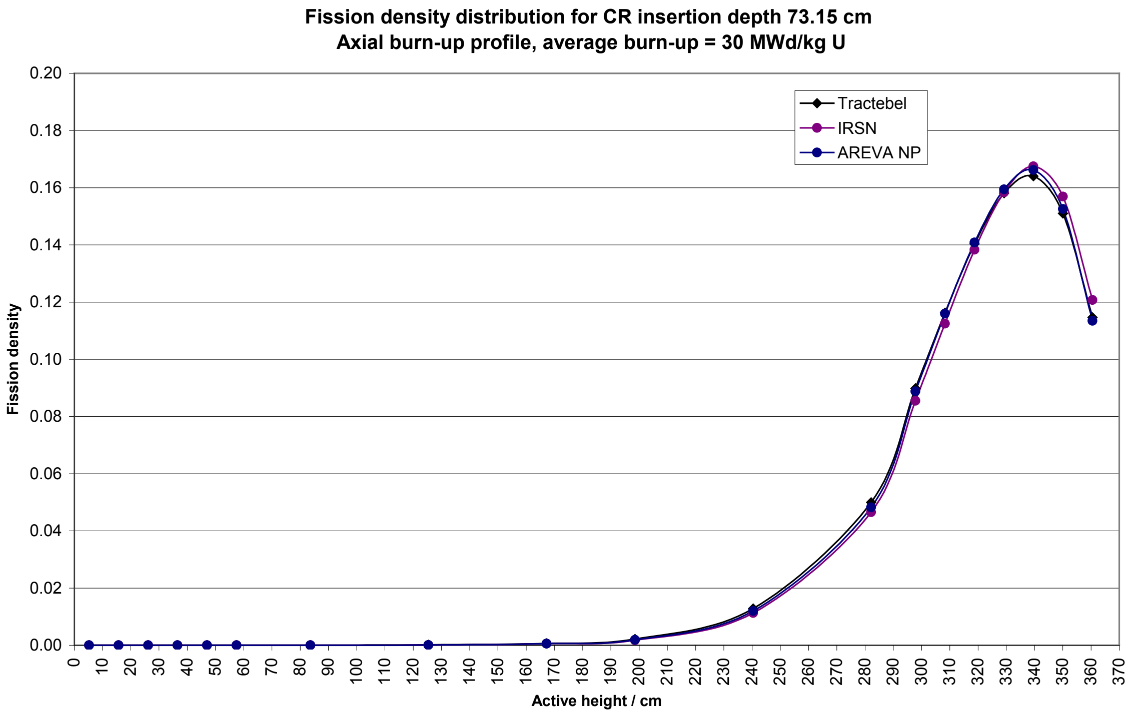


Figure 8.16b

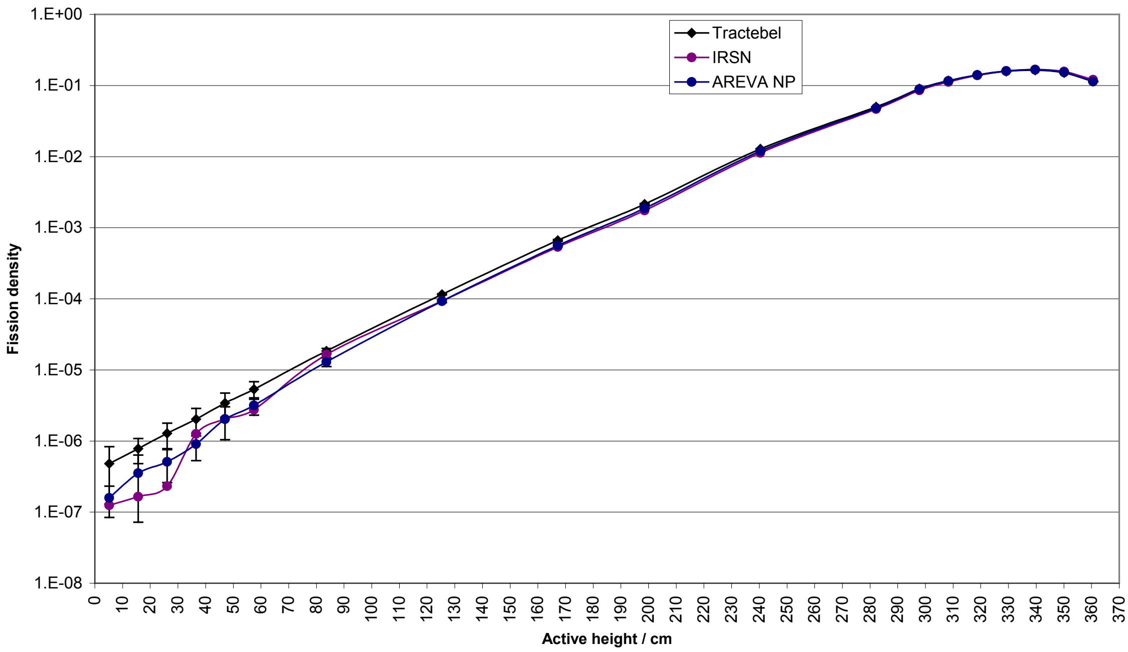


Figure 8.17: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.21)

Figure 8.17a

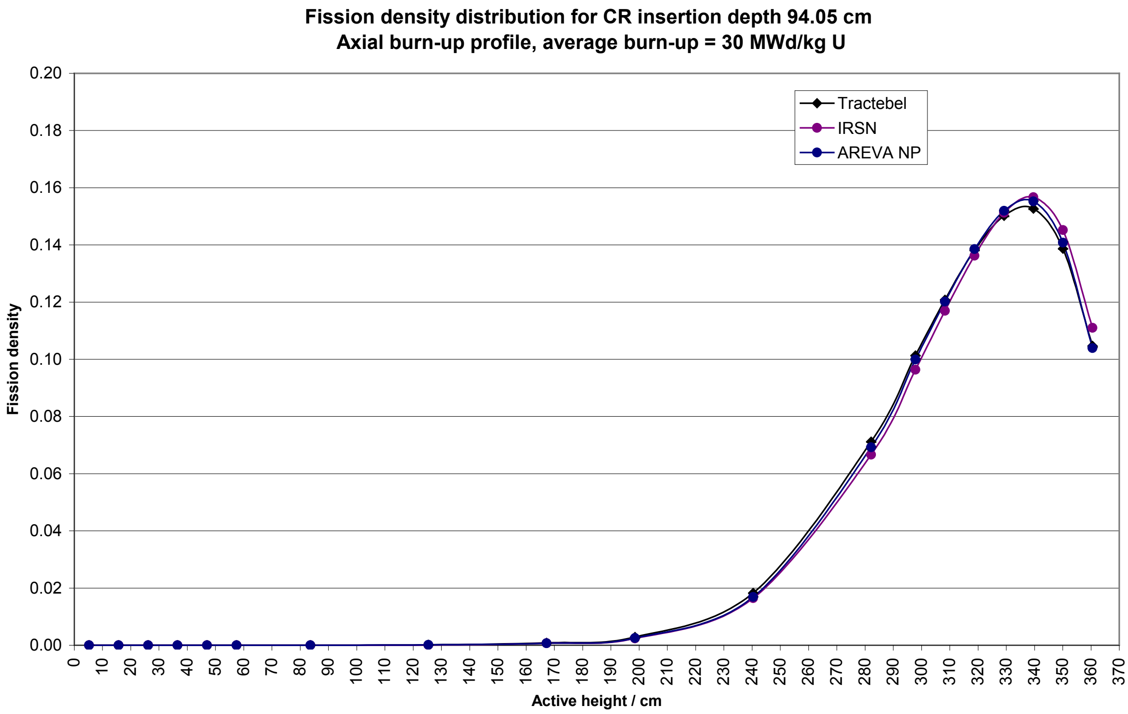


Figure 8.17b

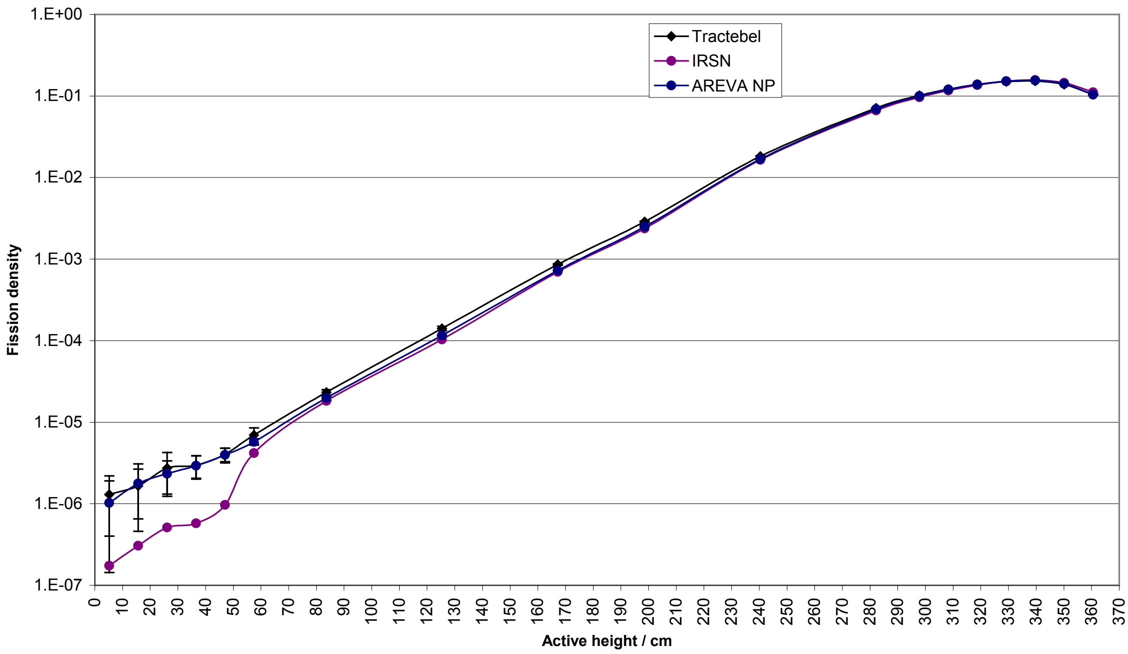


Figure 8.18: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.22)

Figure 8.18a

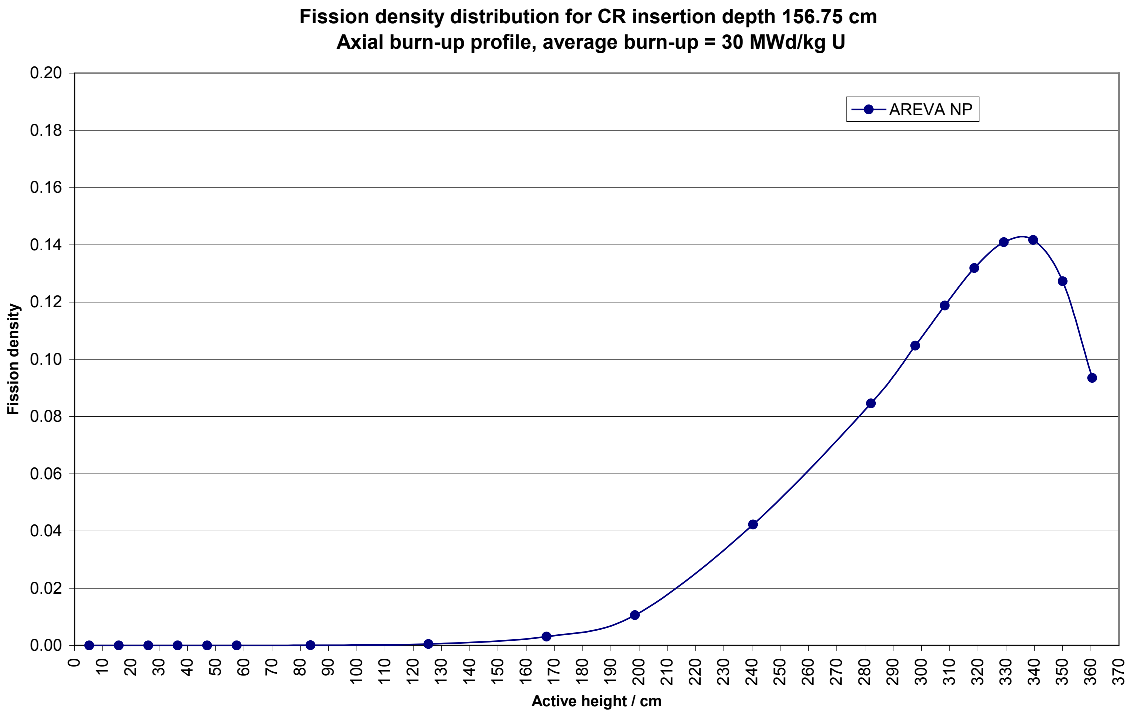


Figure 8.18b

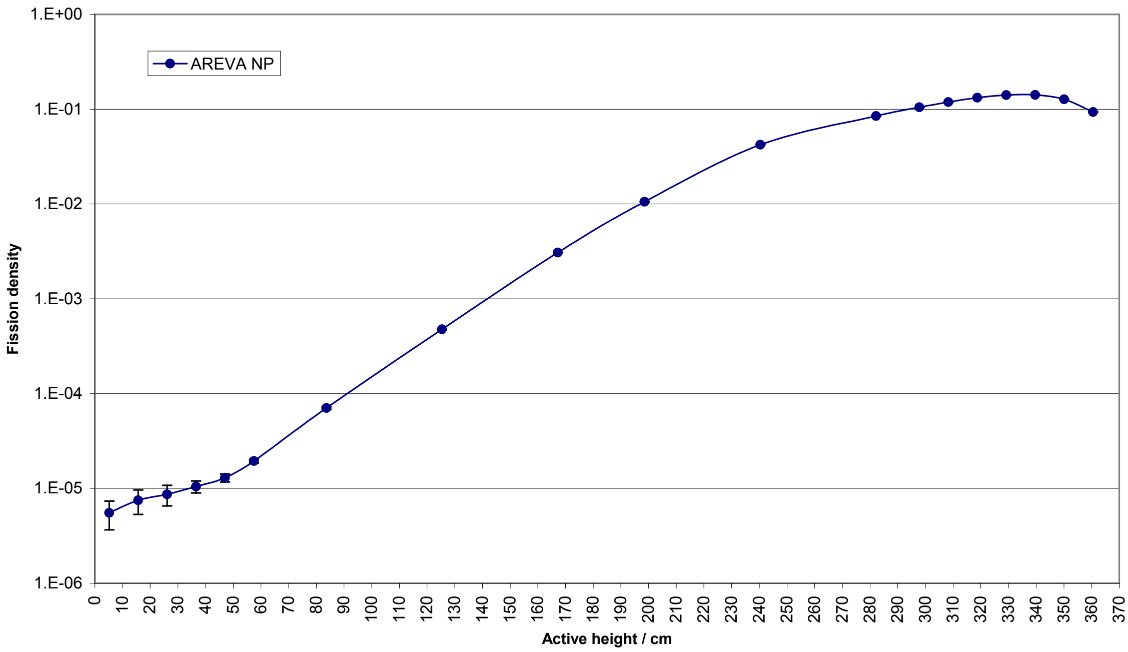


Figure 8.19: Results from the contributors for the 30 MWd/kg U axial burn-up profile: Fission densities (see Table 8.23)

Figure 8.19a

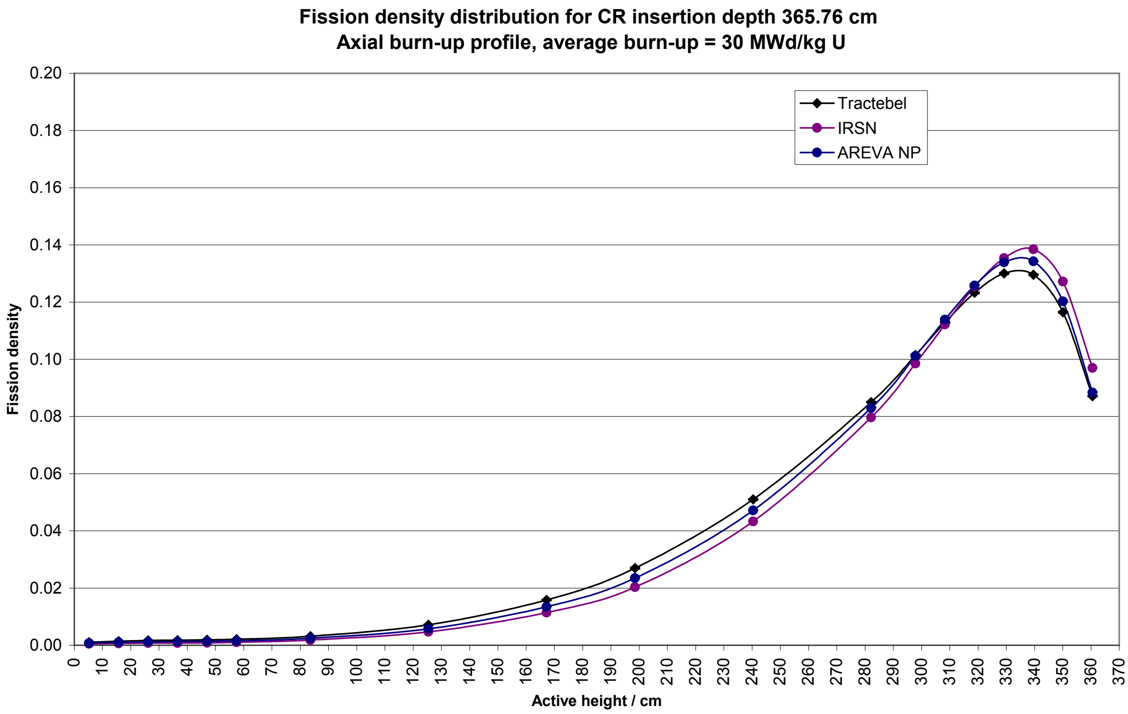


Figure 8.19b

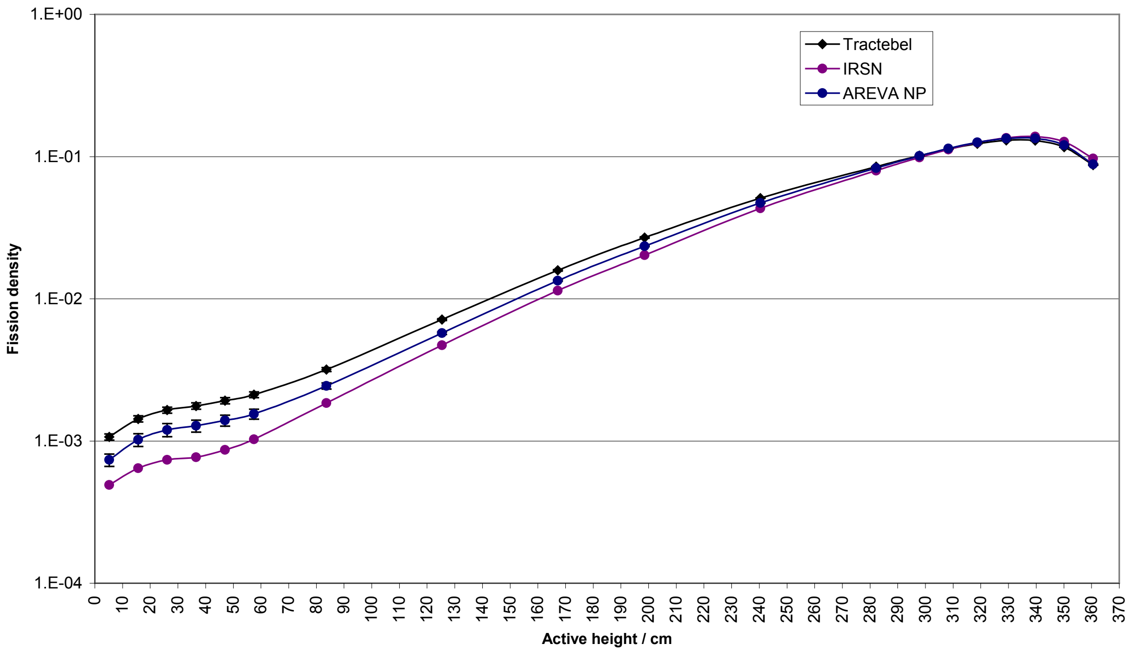


Figure 8.20: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.24)

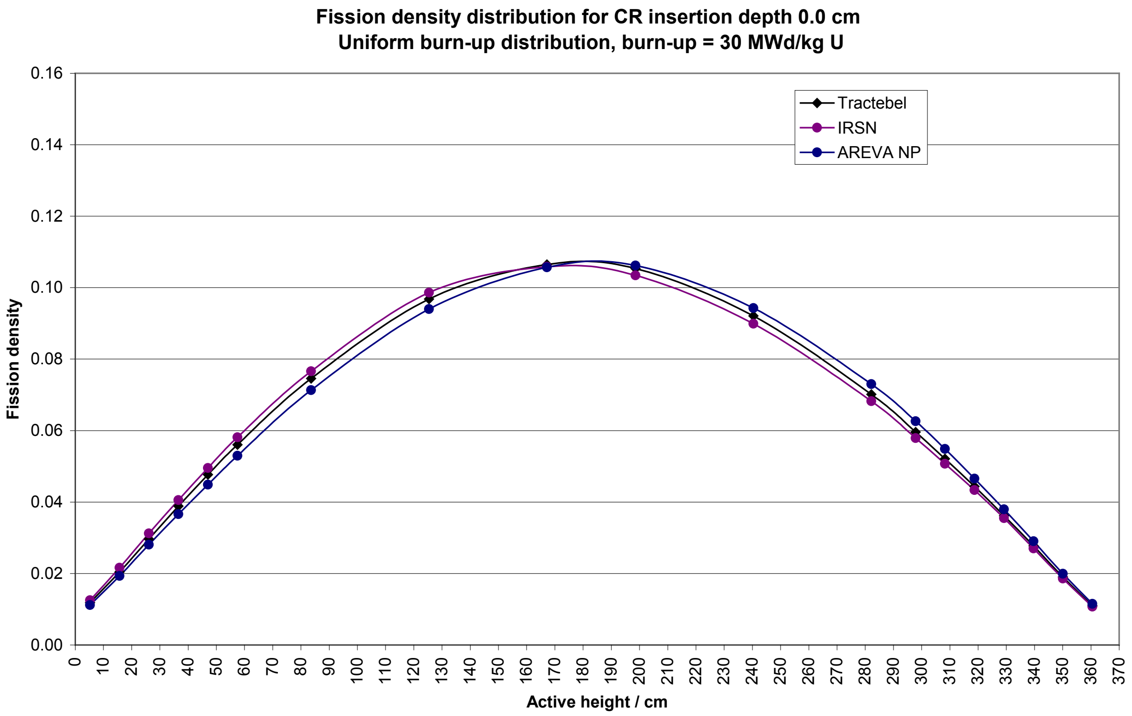


Figure 8.21: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.25)

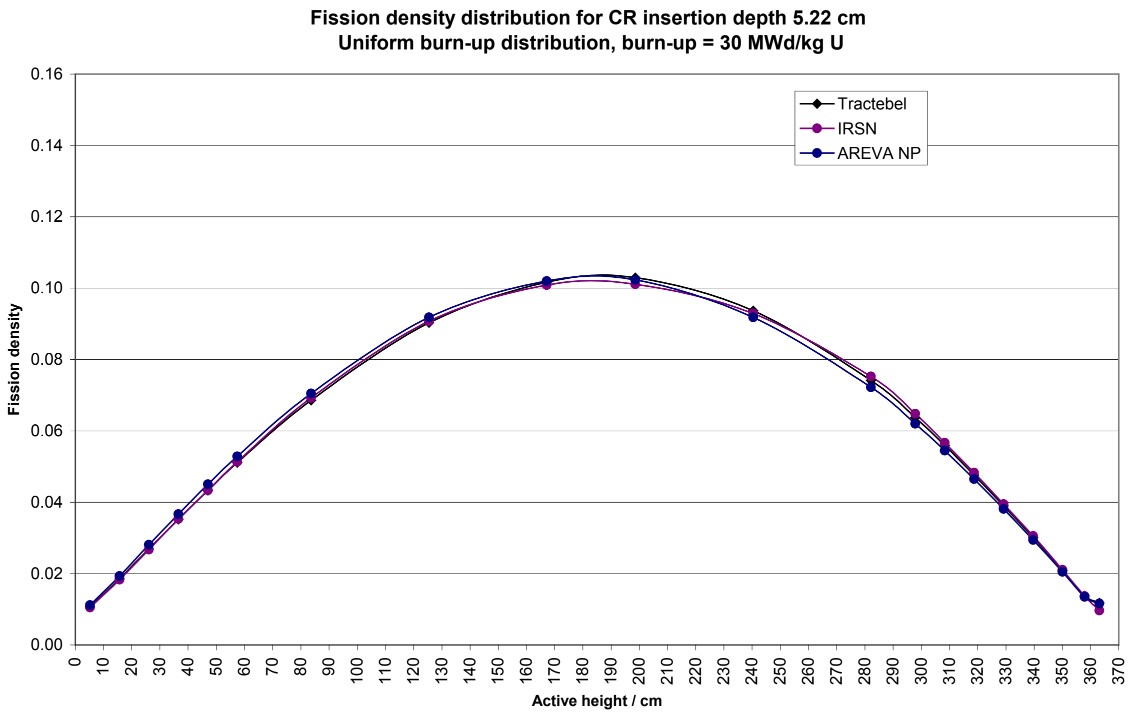


Figure 8.22: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.26)

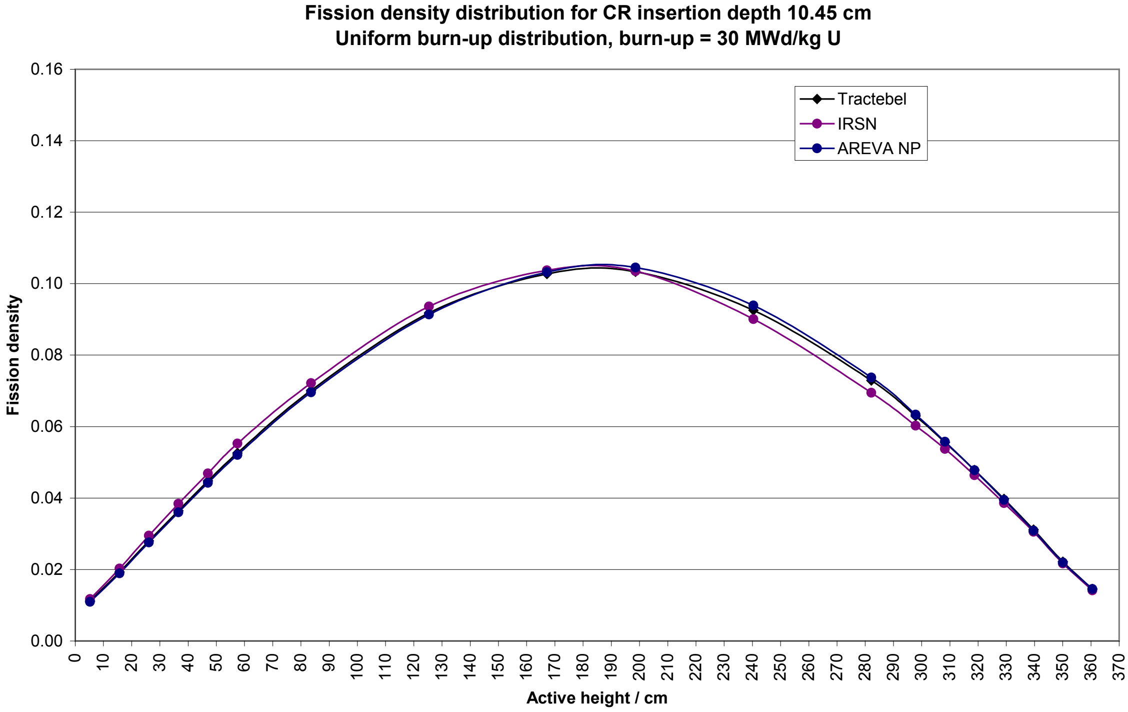


Figure 8.23: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.27)

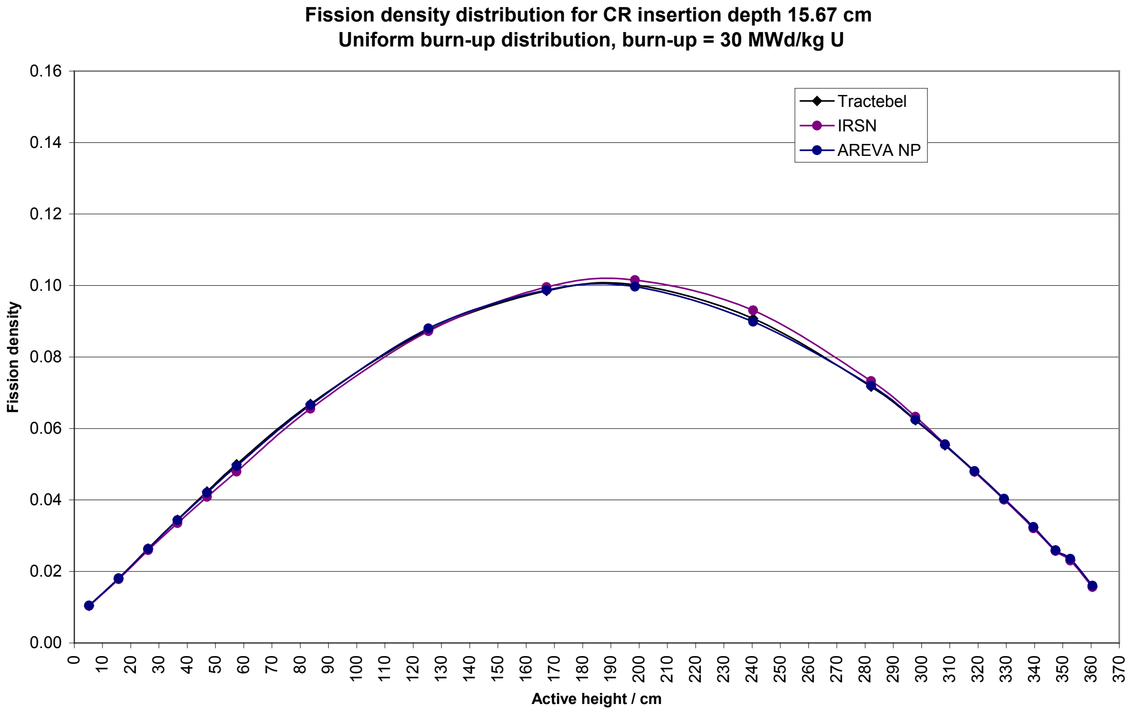


Figure 8.24: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.28)

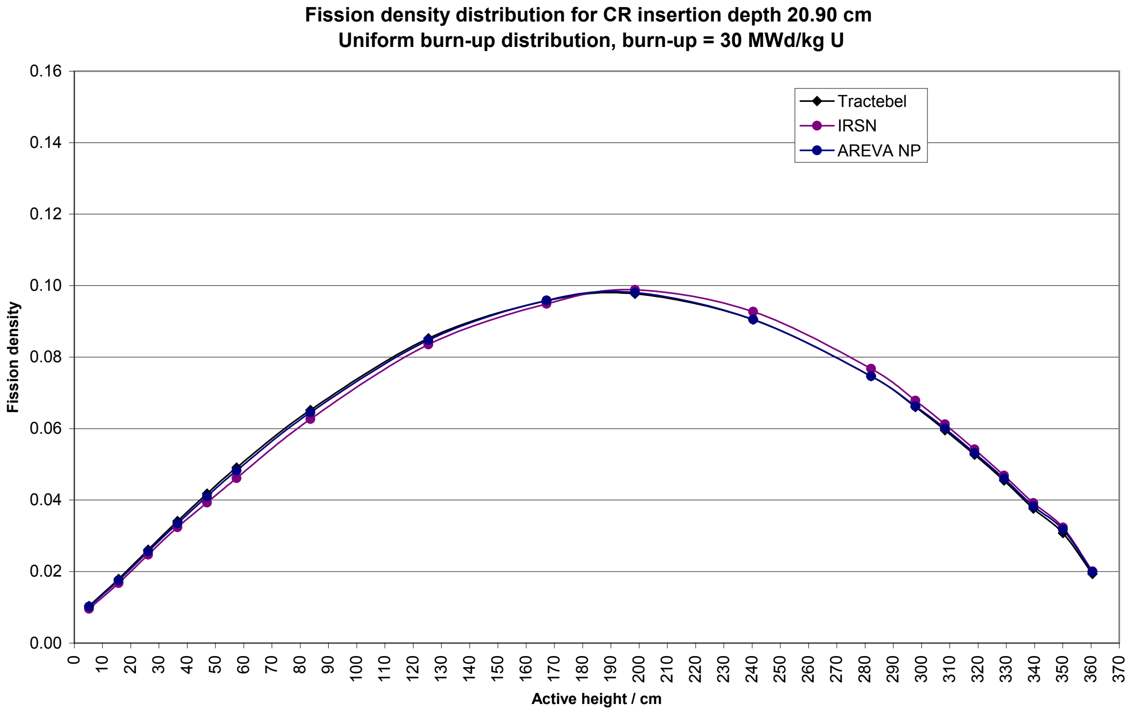


Figure 8.25: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.29)

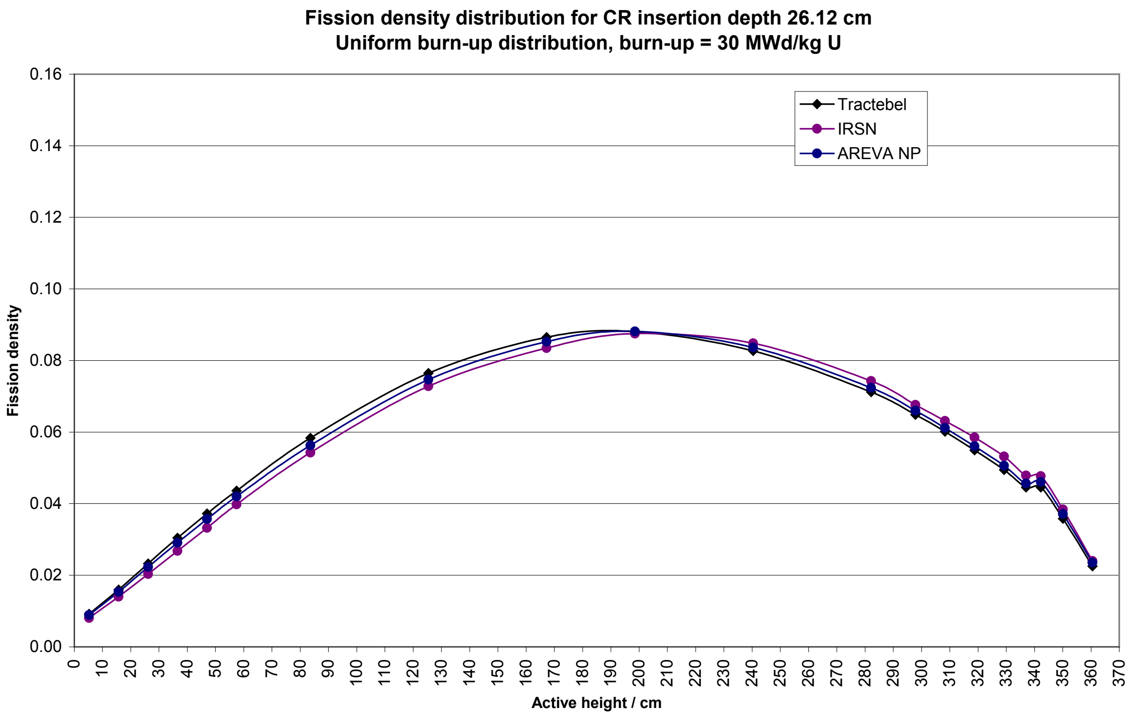


Figure 8.26: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.30)

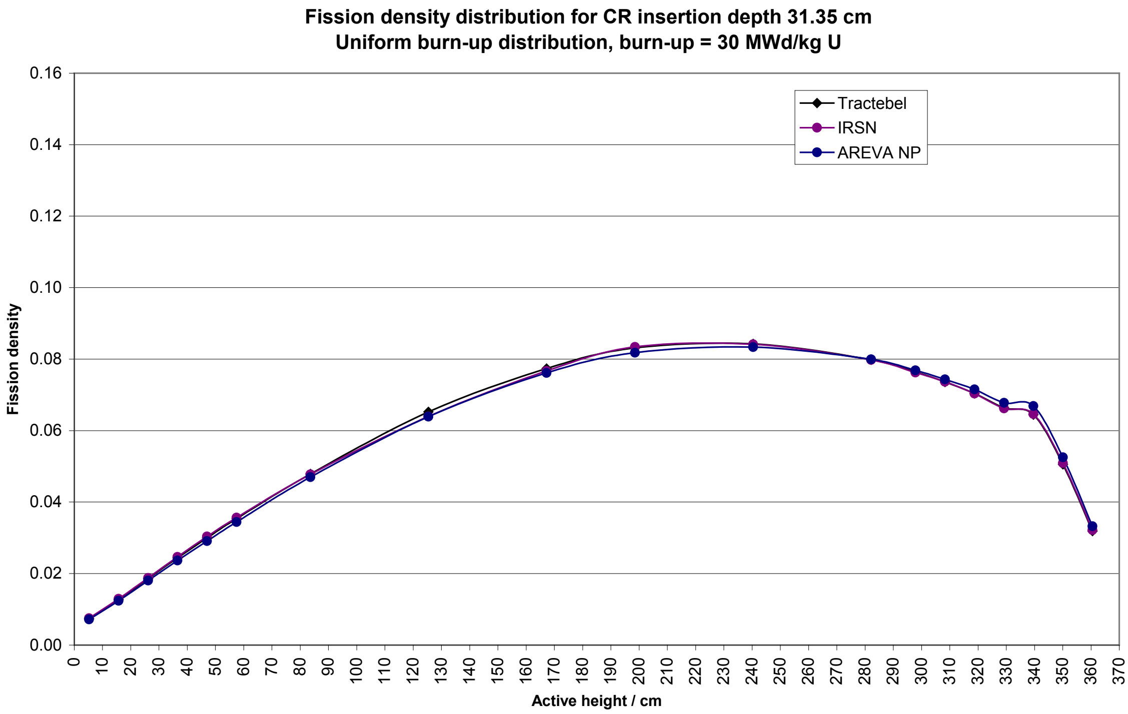


Figure 8.27: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.31)

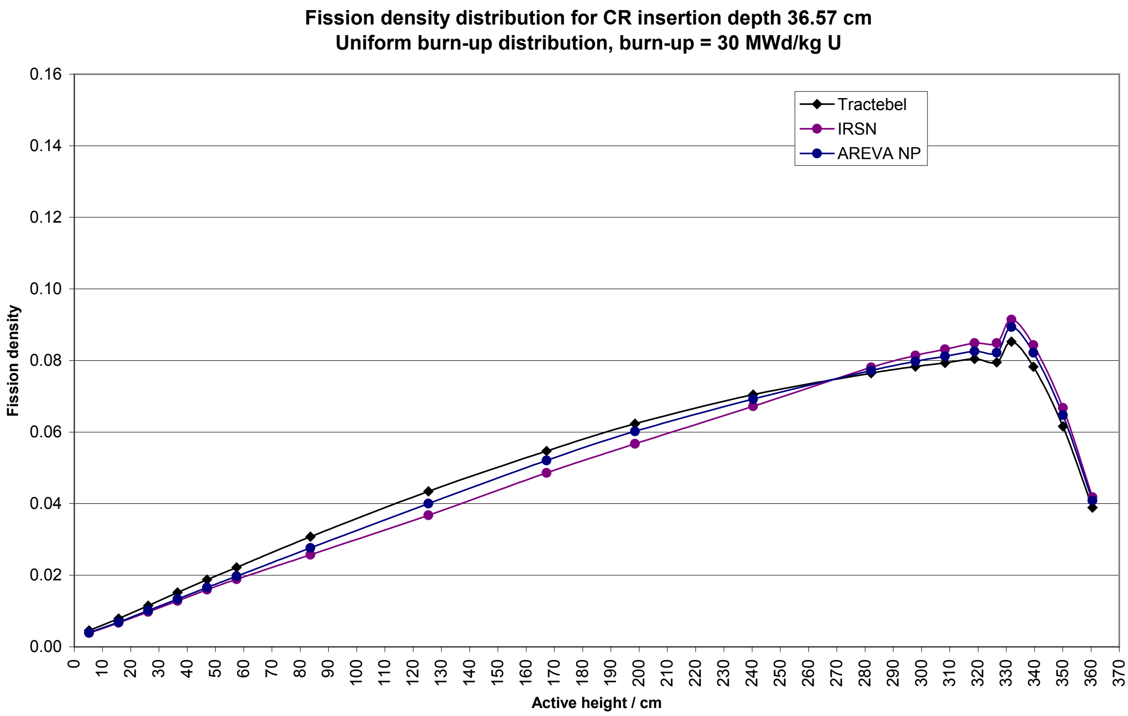


Figure 8.28: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.32)

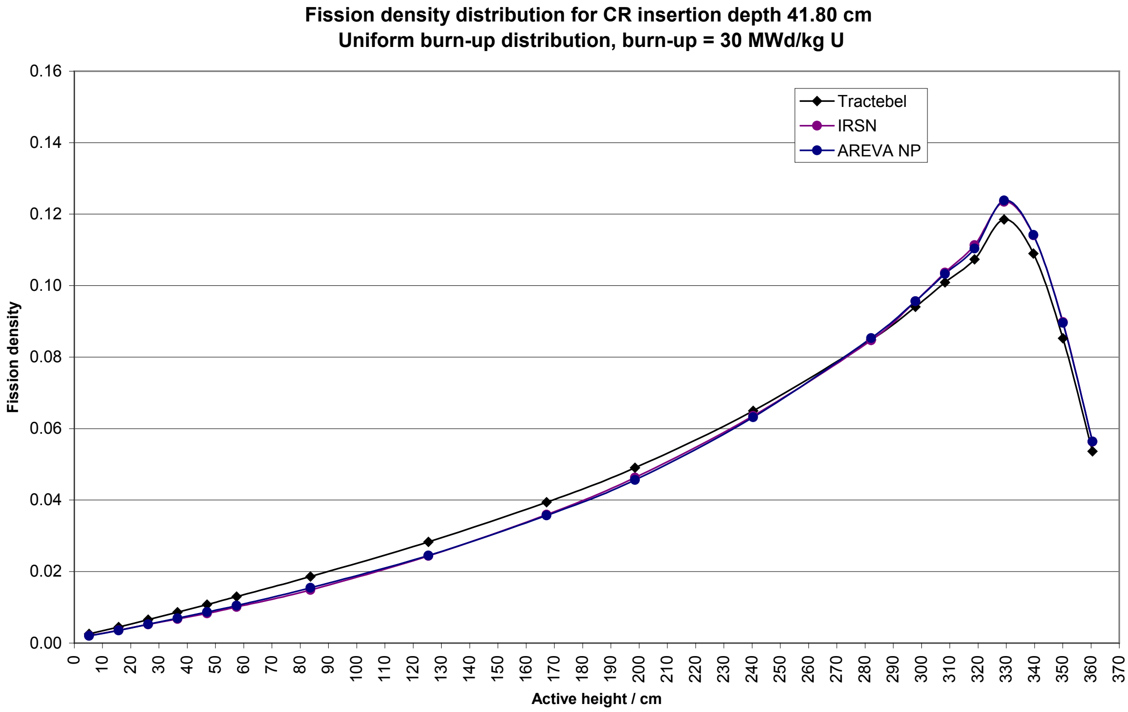


Figure 8.29: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.33)

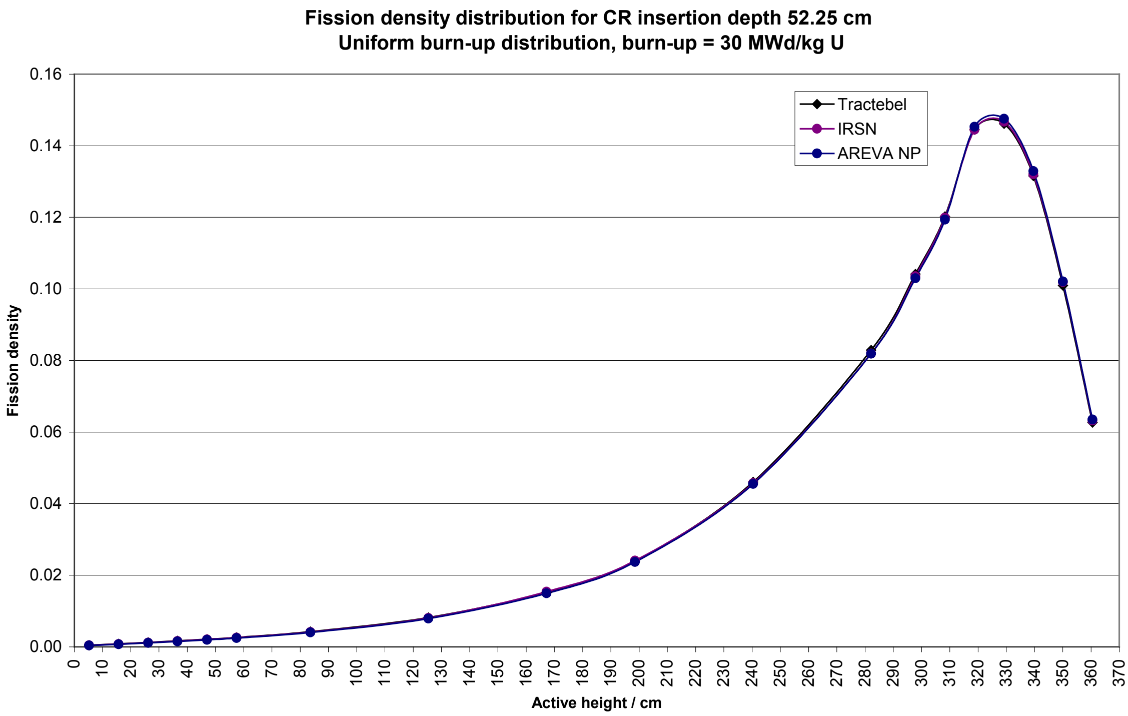


Figure 8.30: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.34)

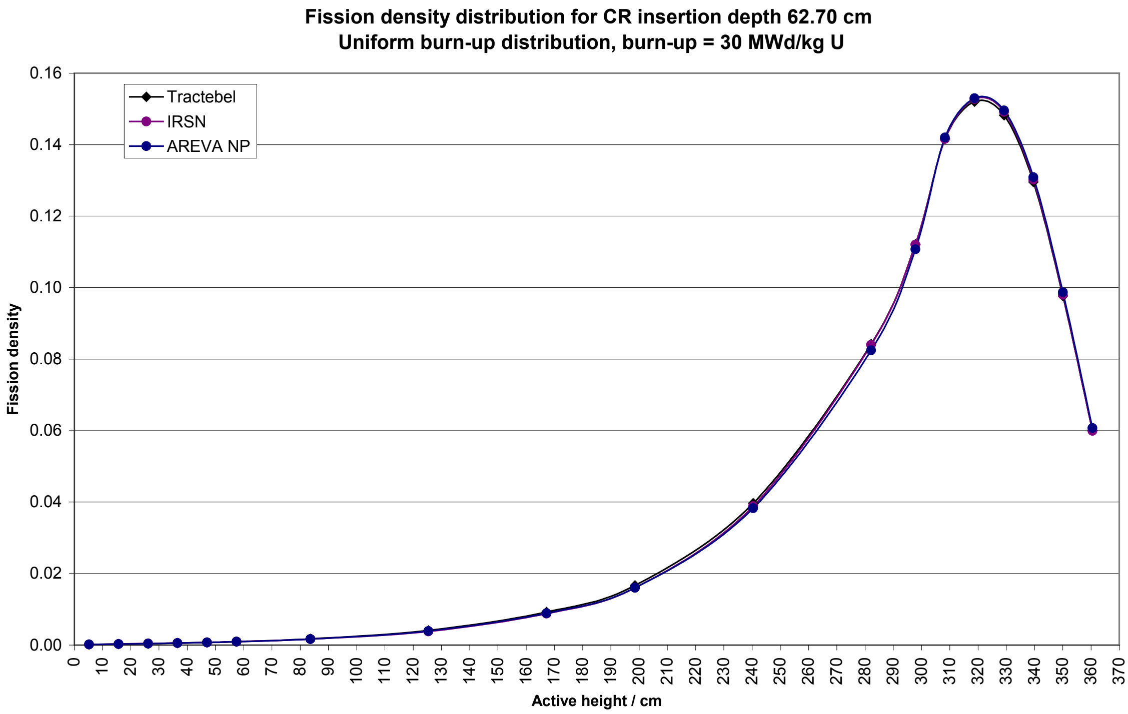


Figure 8.31: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.35)

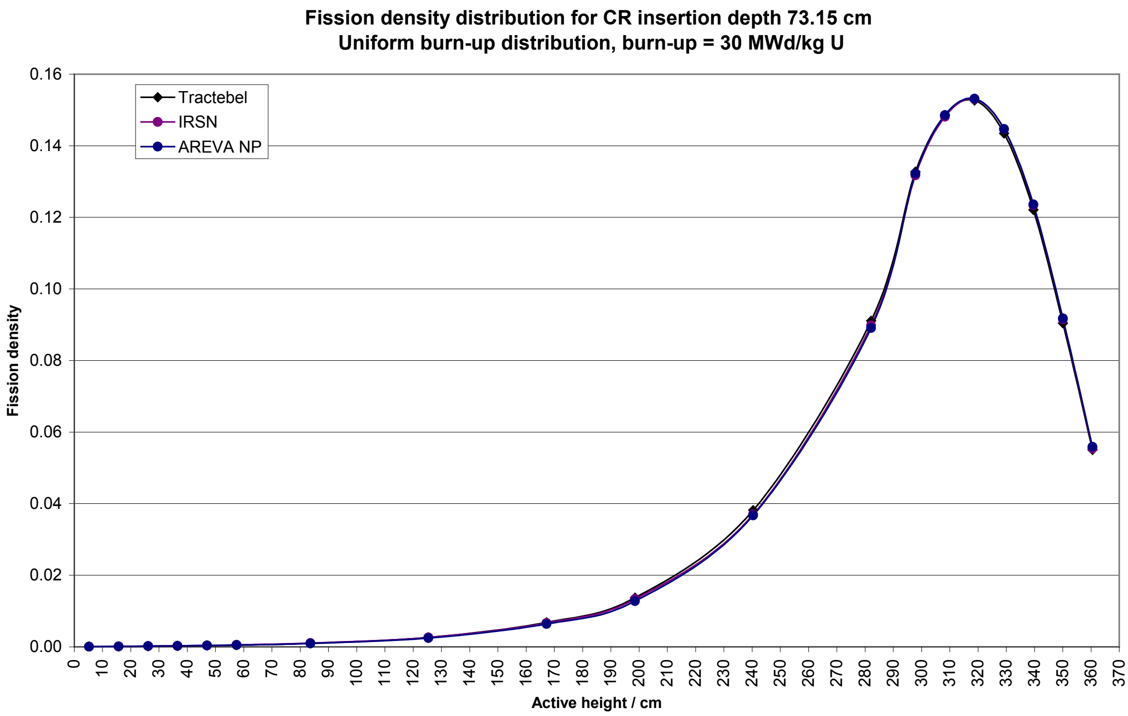


Figure 8.32: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.36)

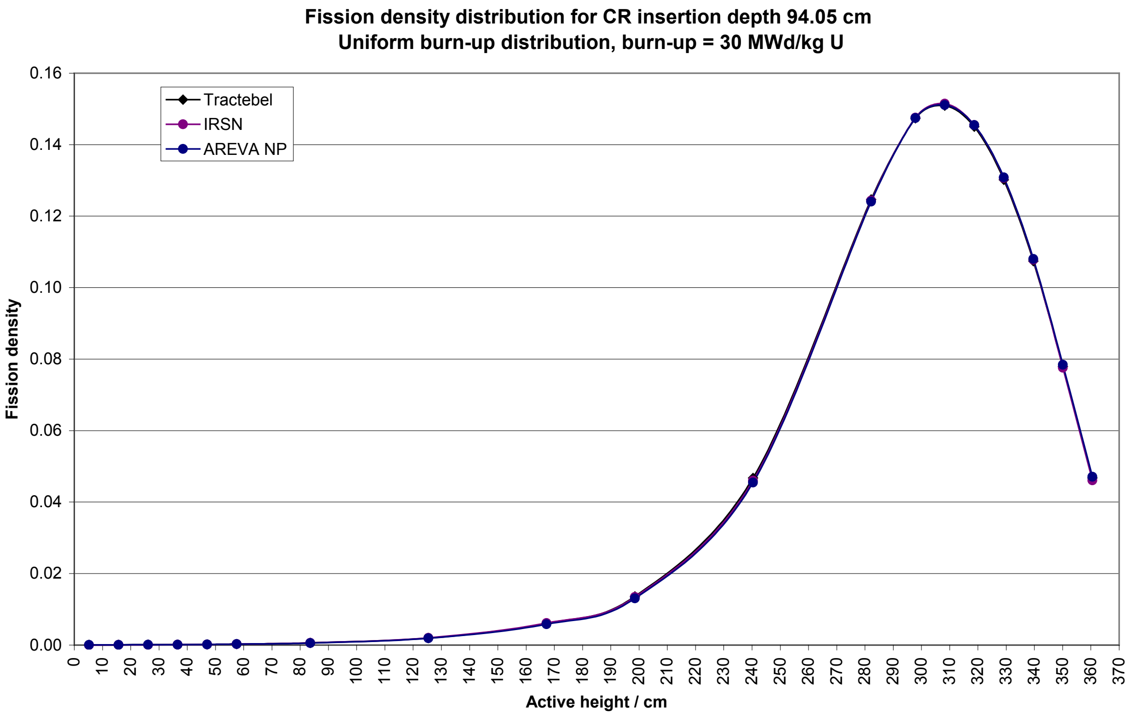


Figure 8.33: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.37)

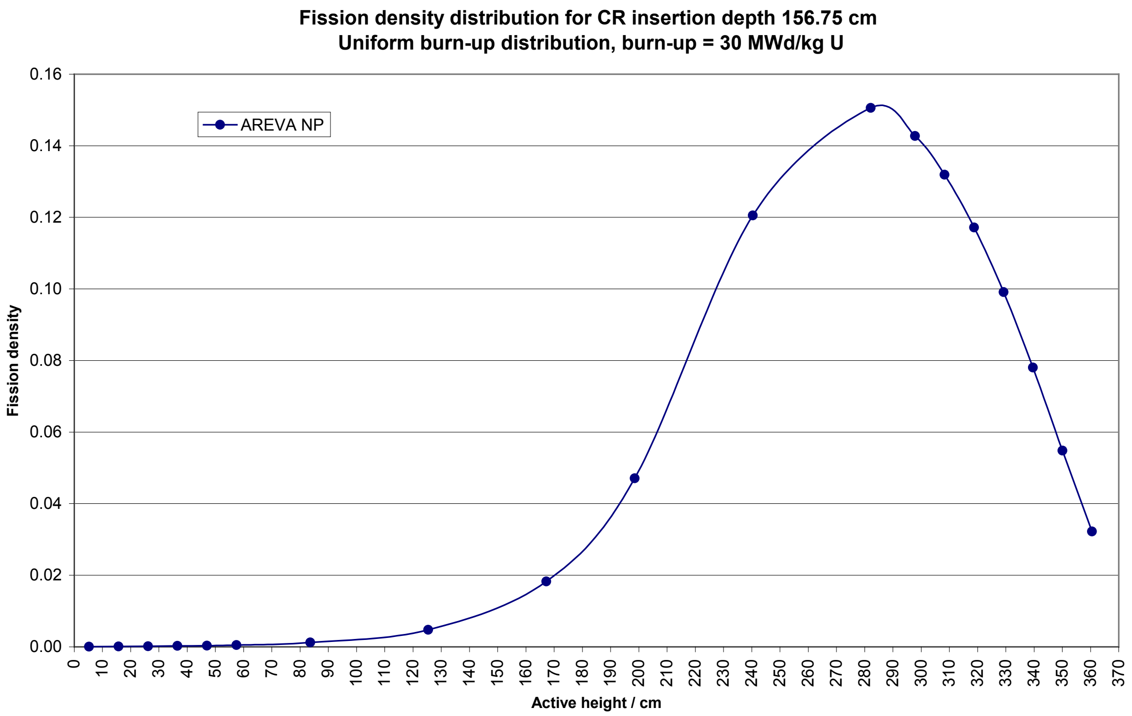


Figure 8.34: Results from the contributors for the 30 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.38)

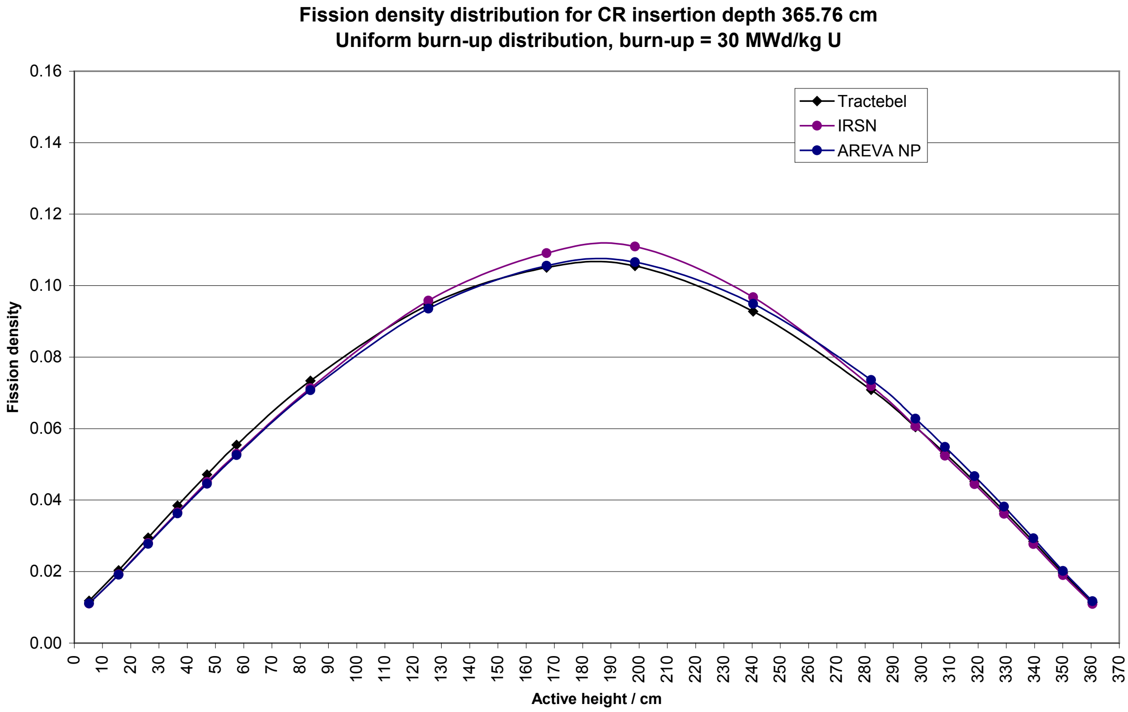


Figure 8.35: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.39)

Figure 8.35a

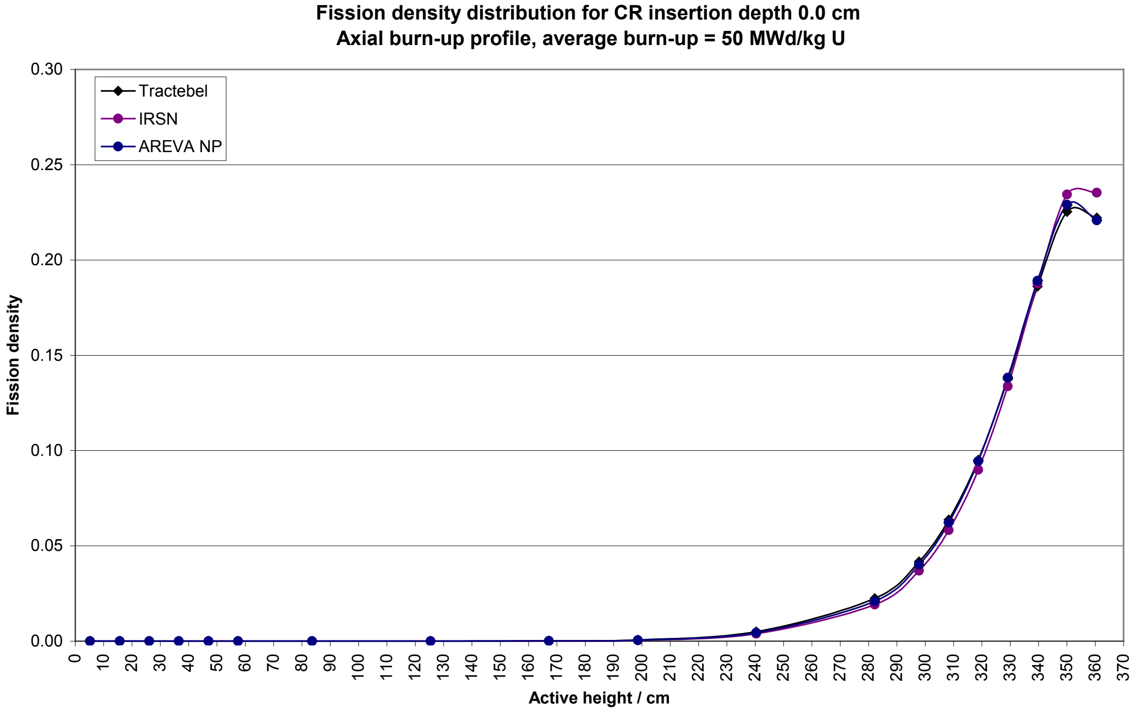


Figure 8.35b

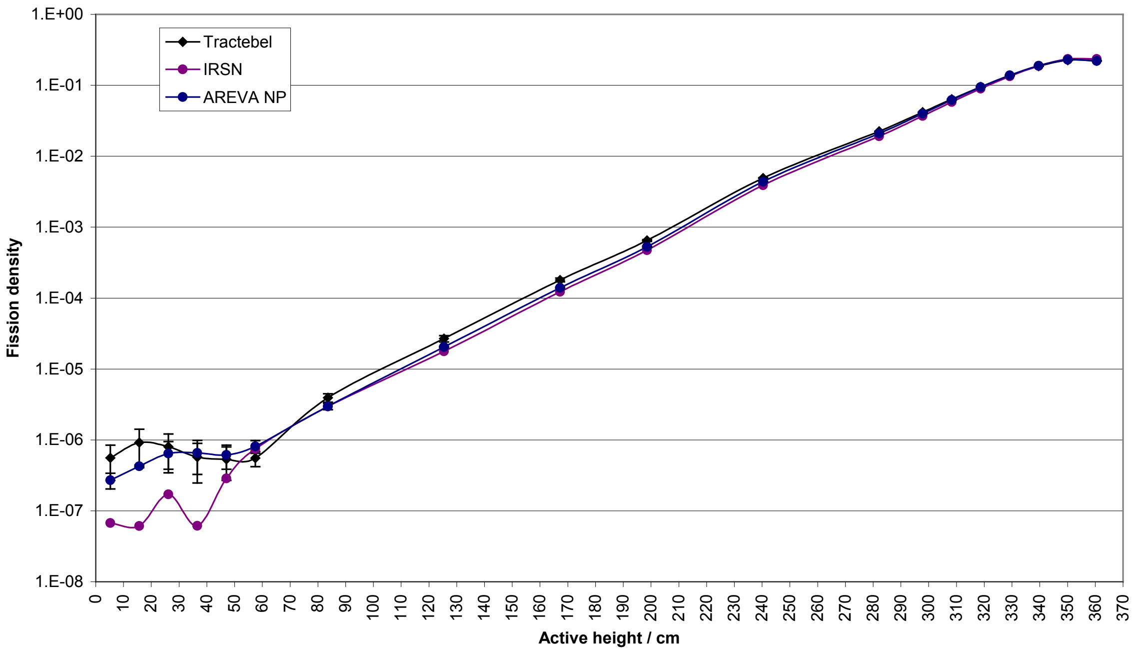


Figure 8.36: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.40)

Figure 8.36a

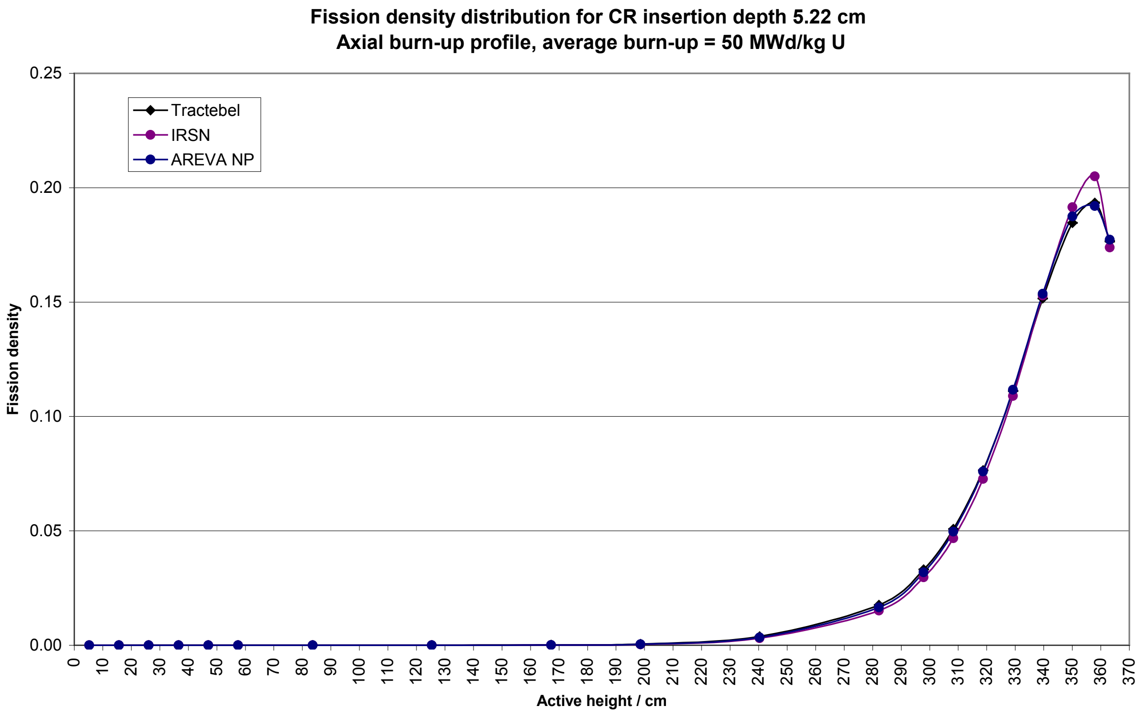


Figure 8.36b

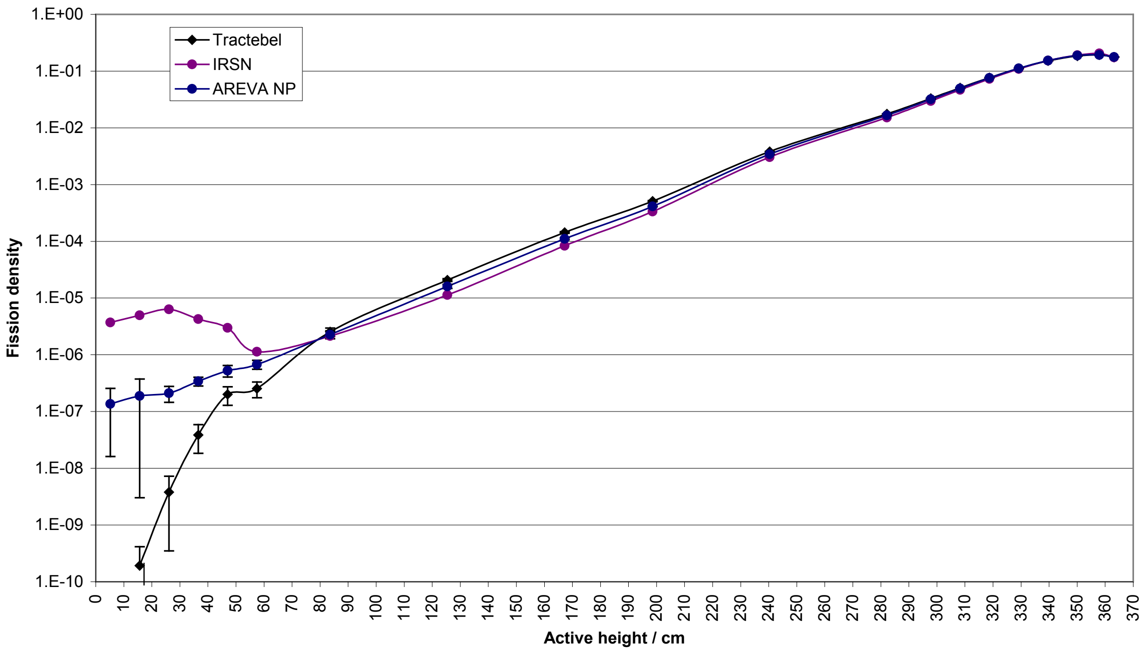


Figure 8.37: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.41)

Figure 8.37a

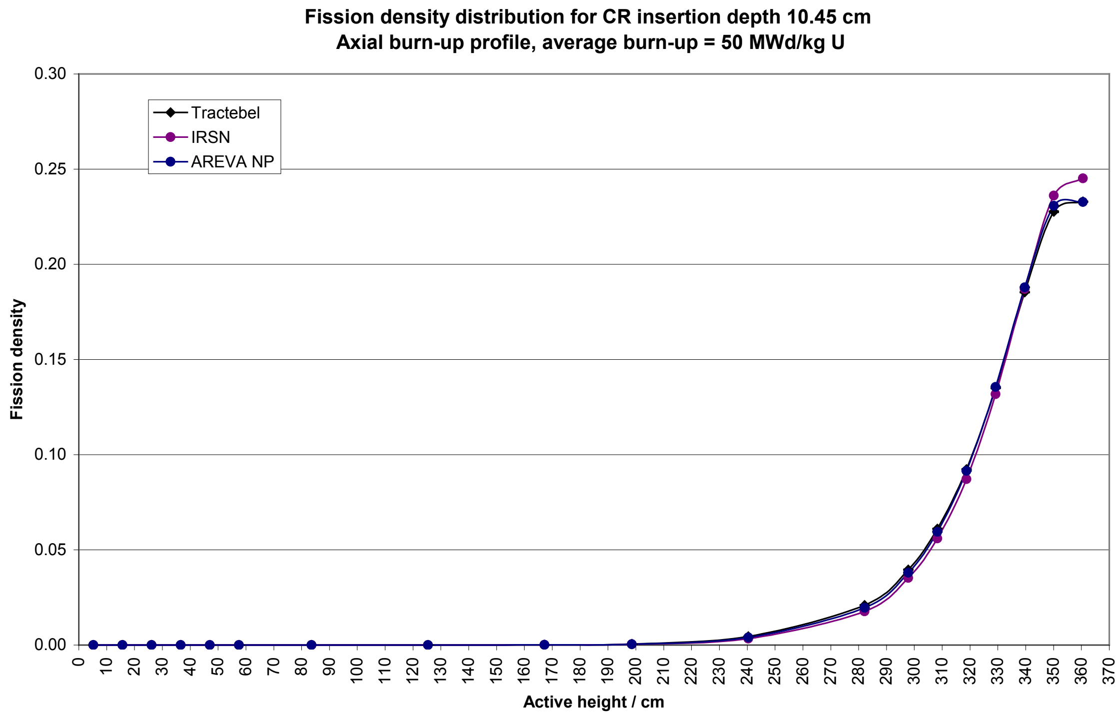


Figure 8.37b

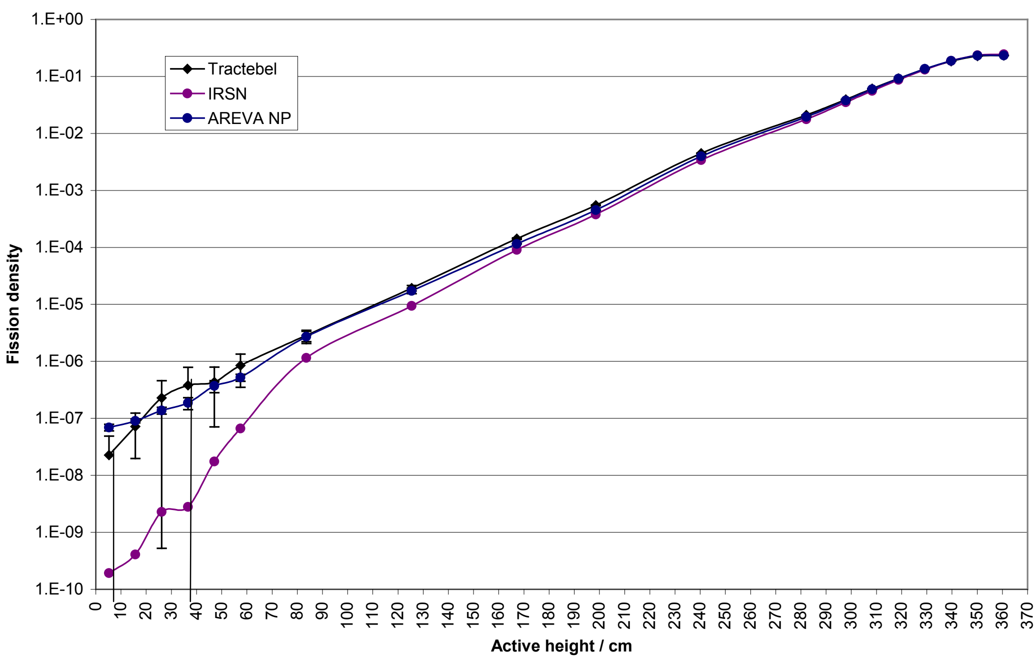


Figure 8.38: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.42)

Figure 8.38a

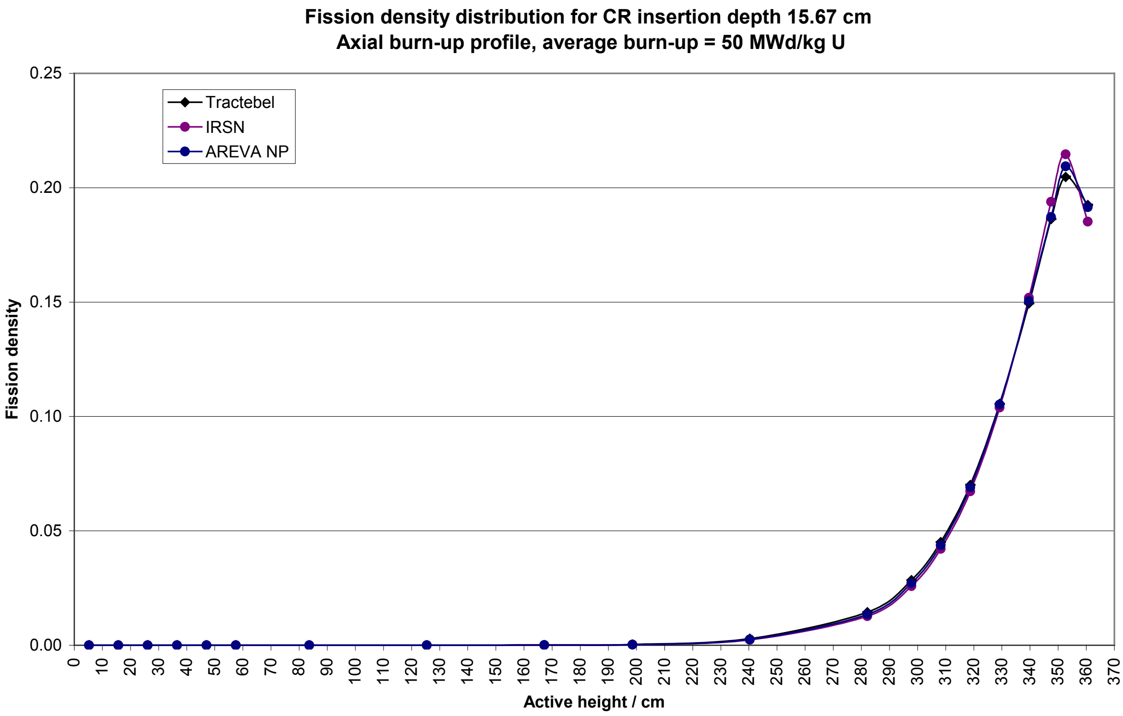


Figure 8.38b

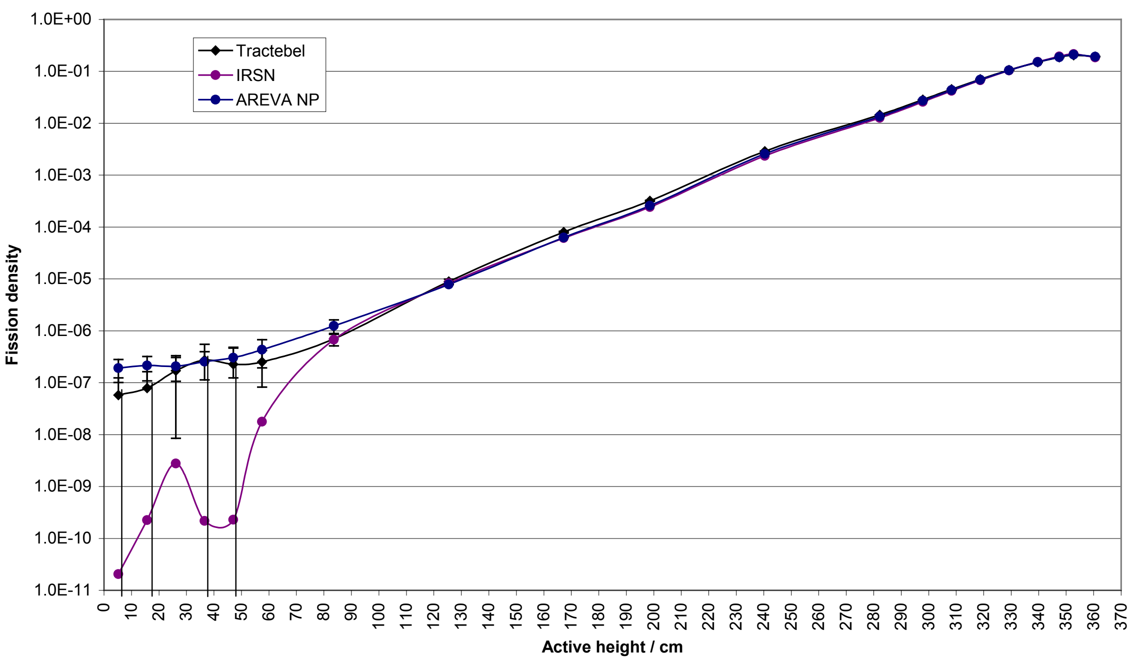


Figure 8.39: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.43)

Figure 8.39a

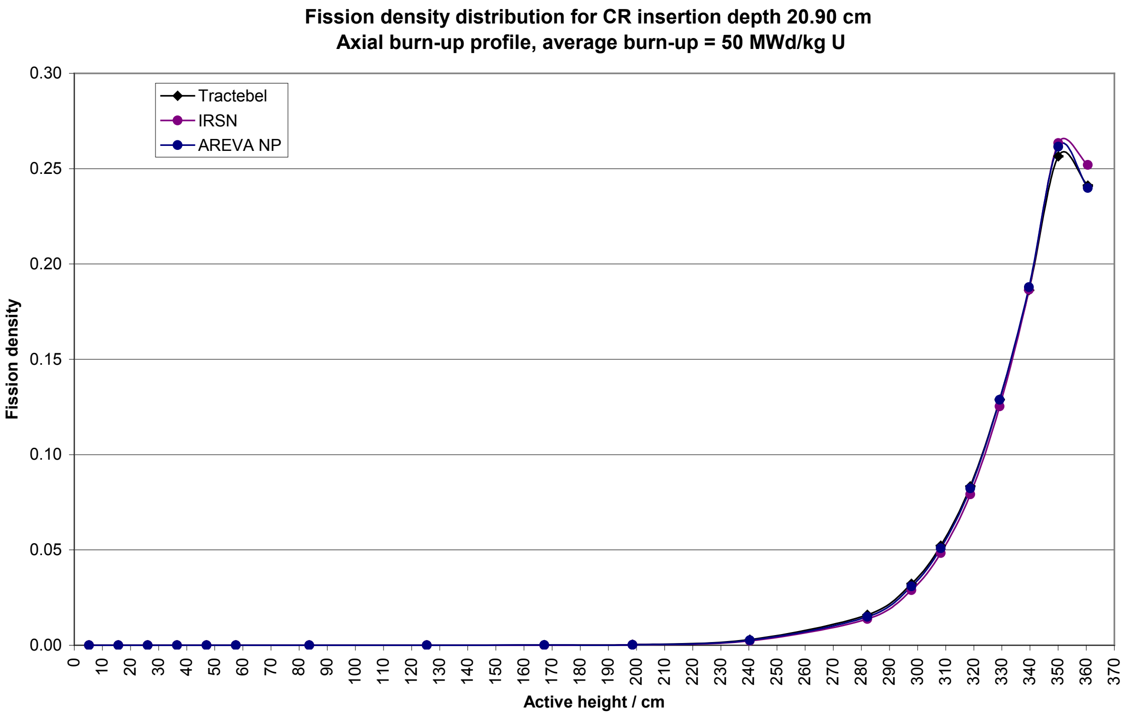


Figure 8.39b

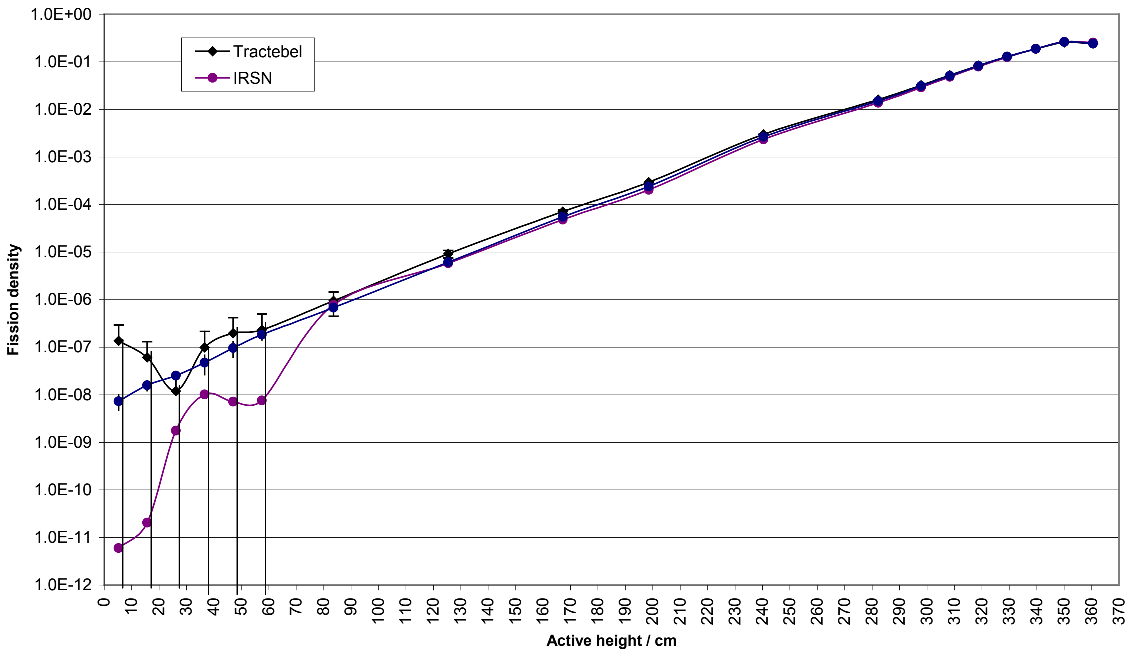


Figure 8.40: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.44)

Figure 8.40a

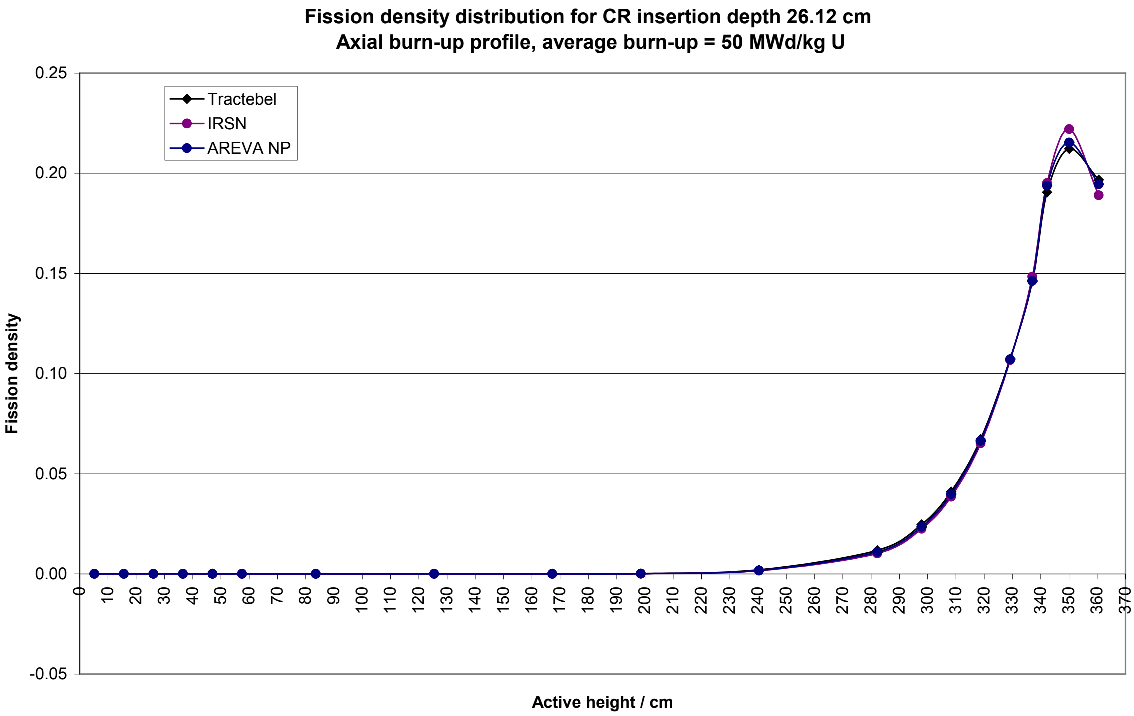


Figure 8.40b

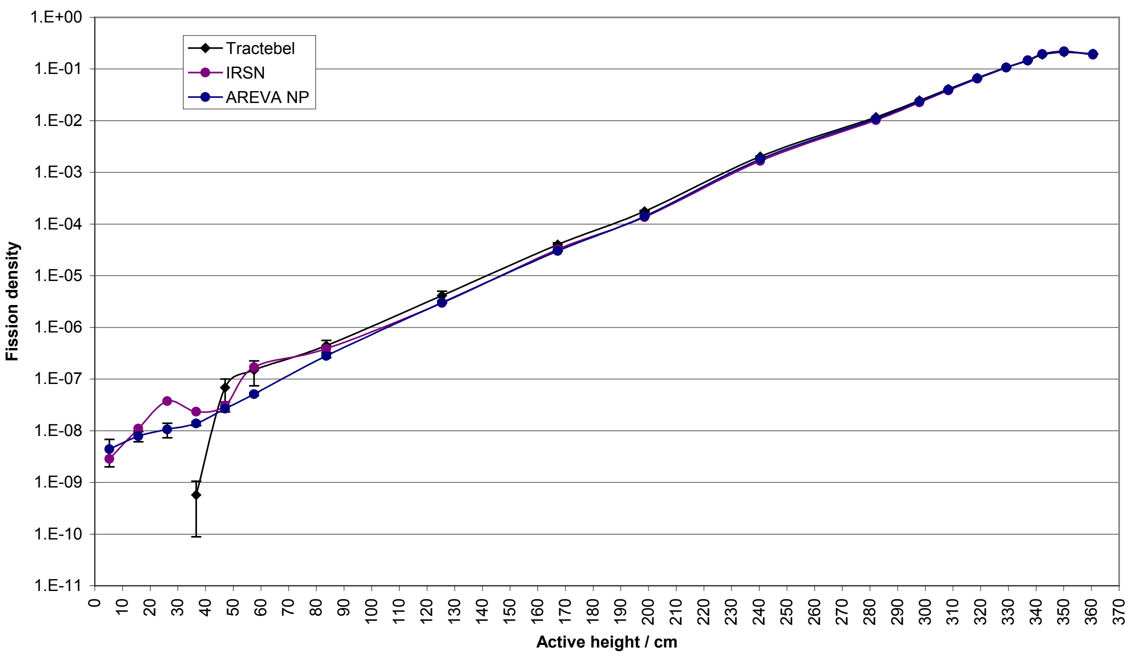


Figure 8.41: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.45)

Figure 8.41a

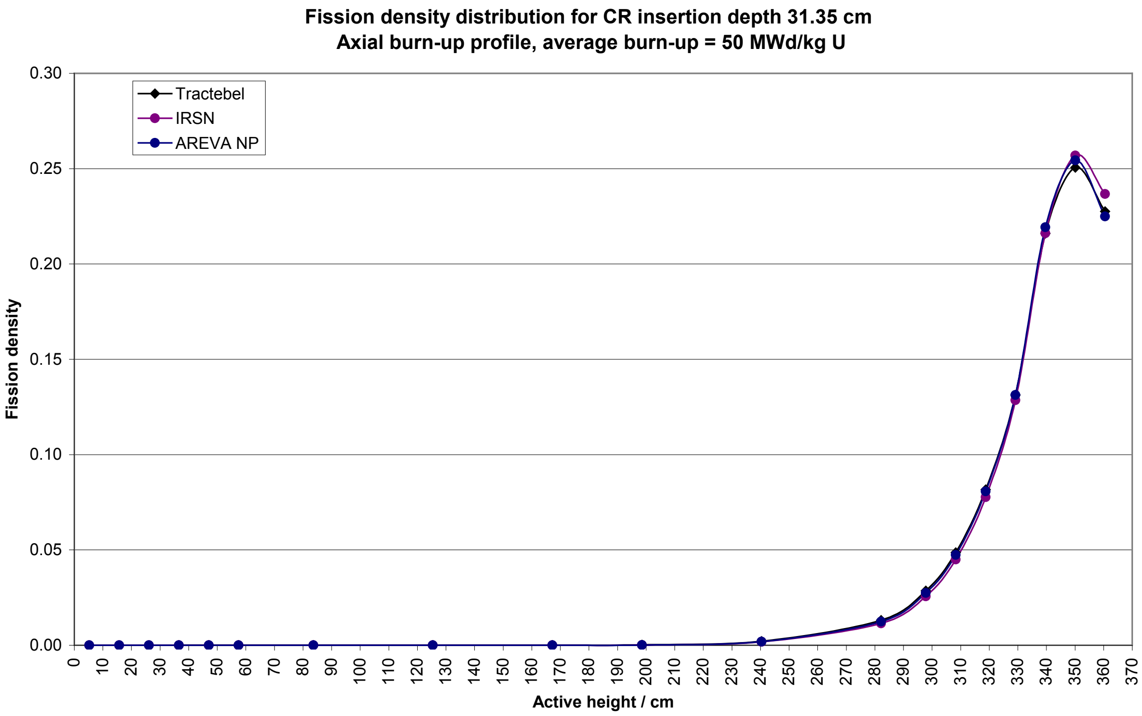


Figure 8.41b

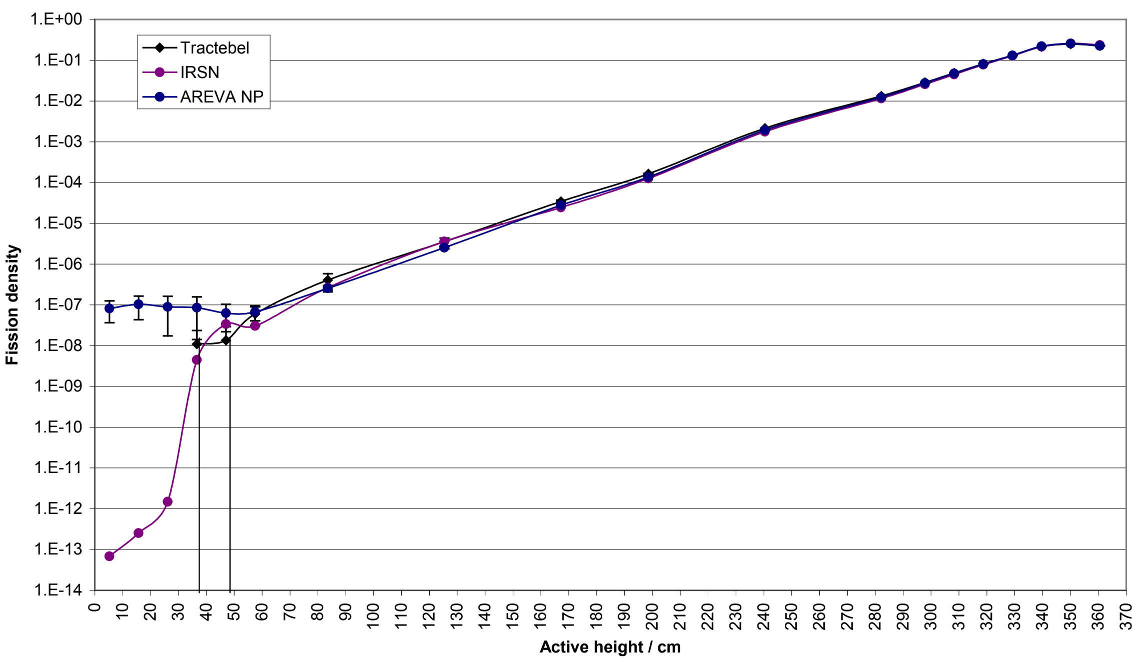


Figure 8.42: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.46)

Figure 8.42a

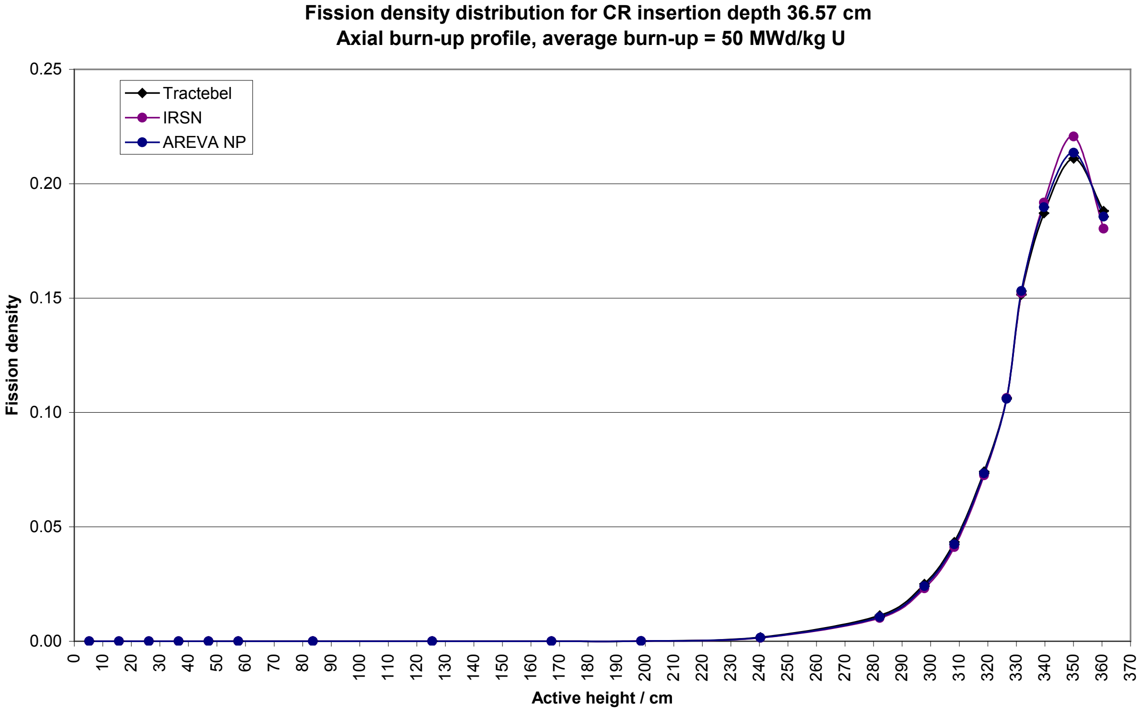


Figure 8.42b

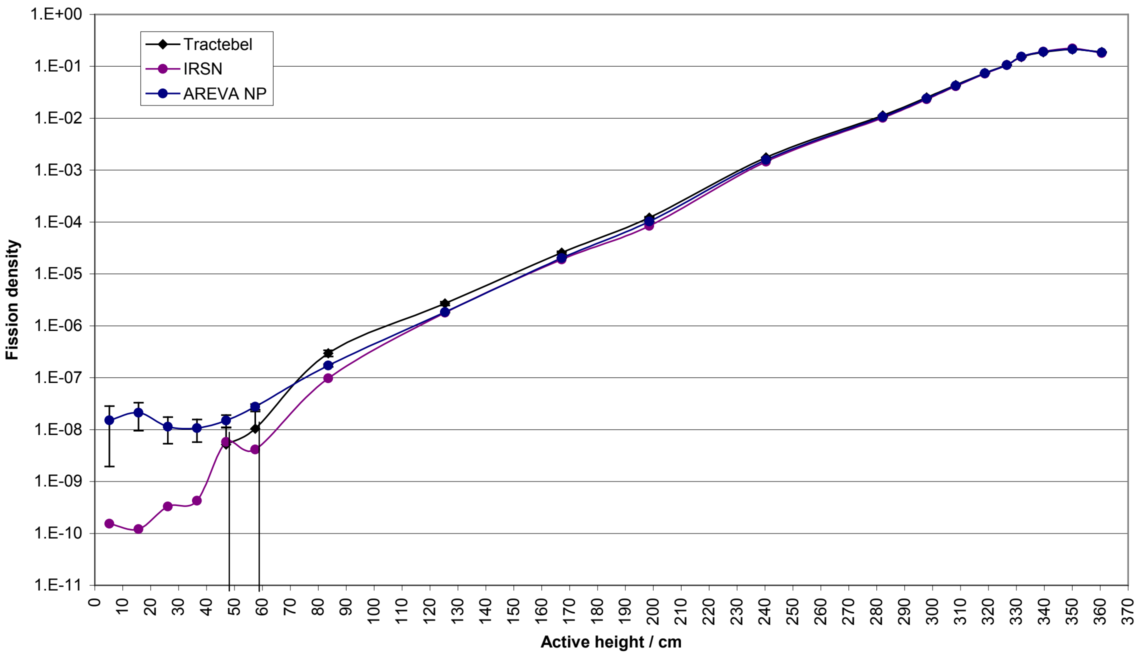


Figure 8.43: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.47)

Figure 8.43a

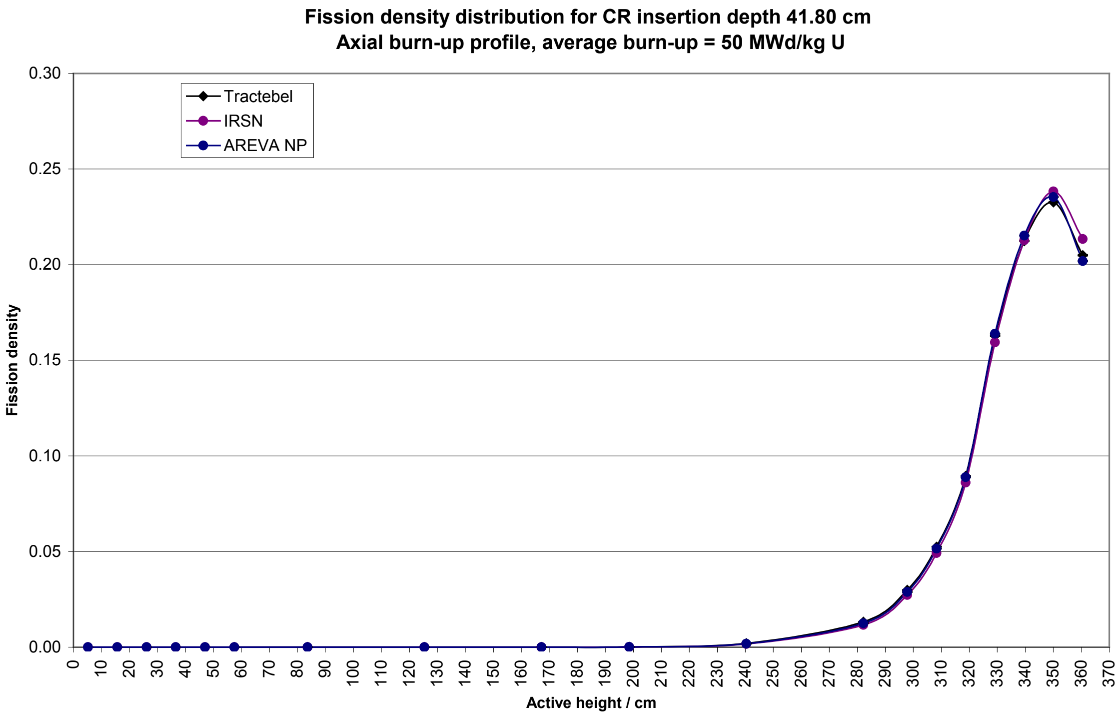


Figure 8.43b

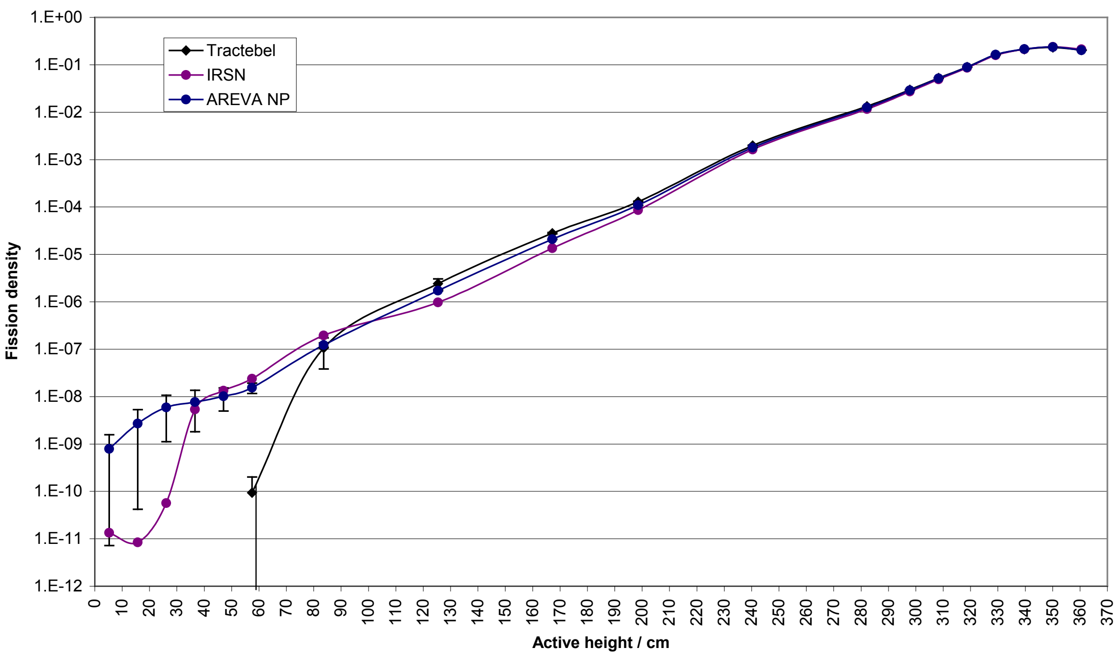


Figure 8.44: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.48)

Figure 8.44a

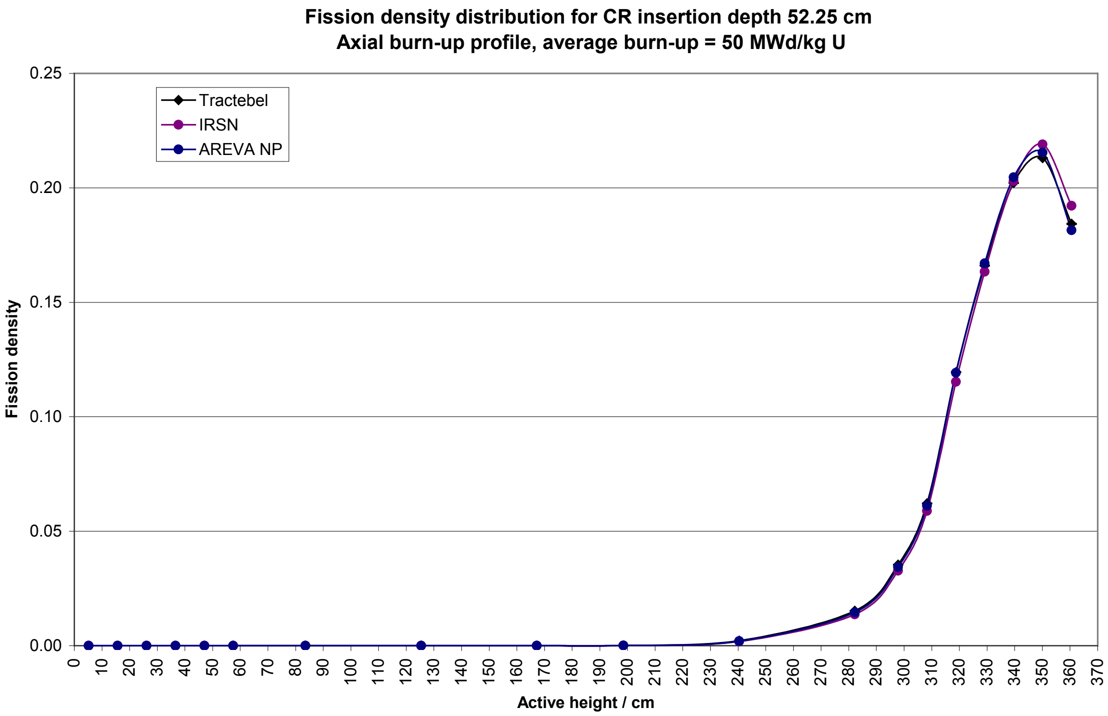


Figure 8.44b

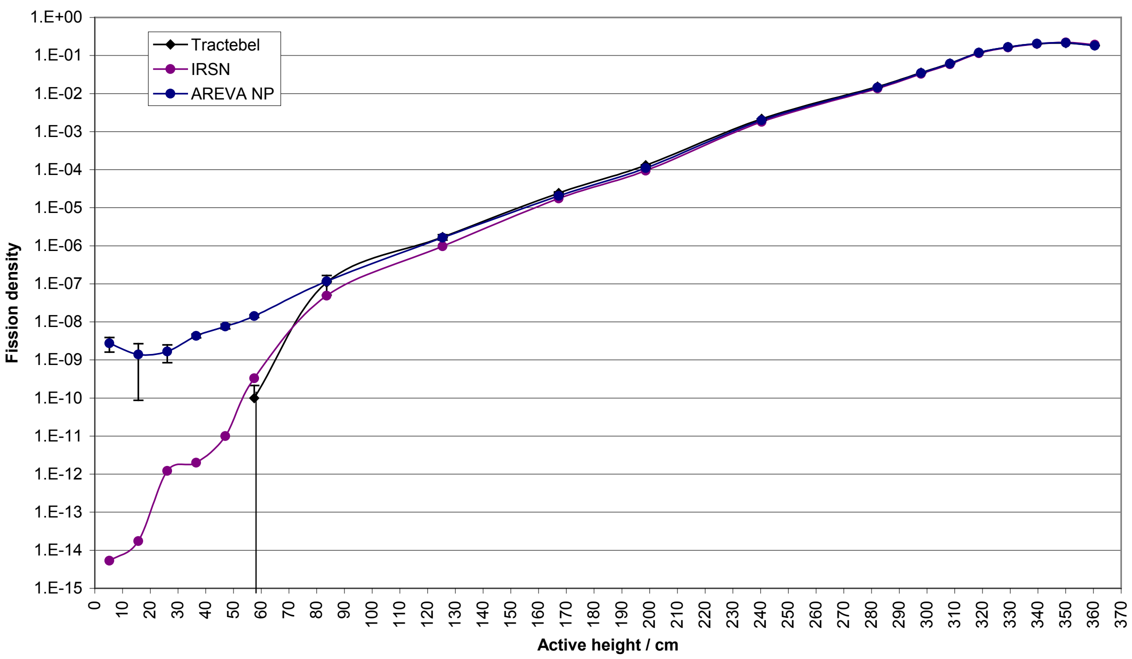


Figure 8.45: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.49)

Figure 8.45a

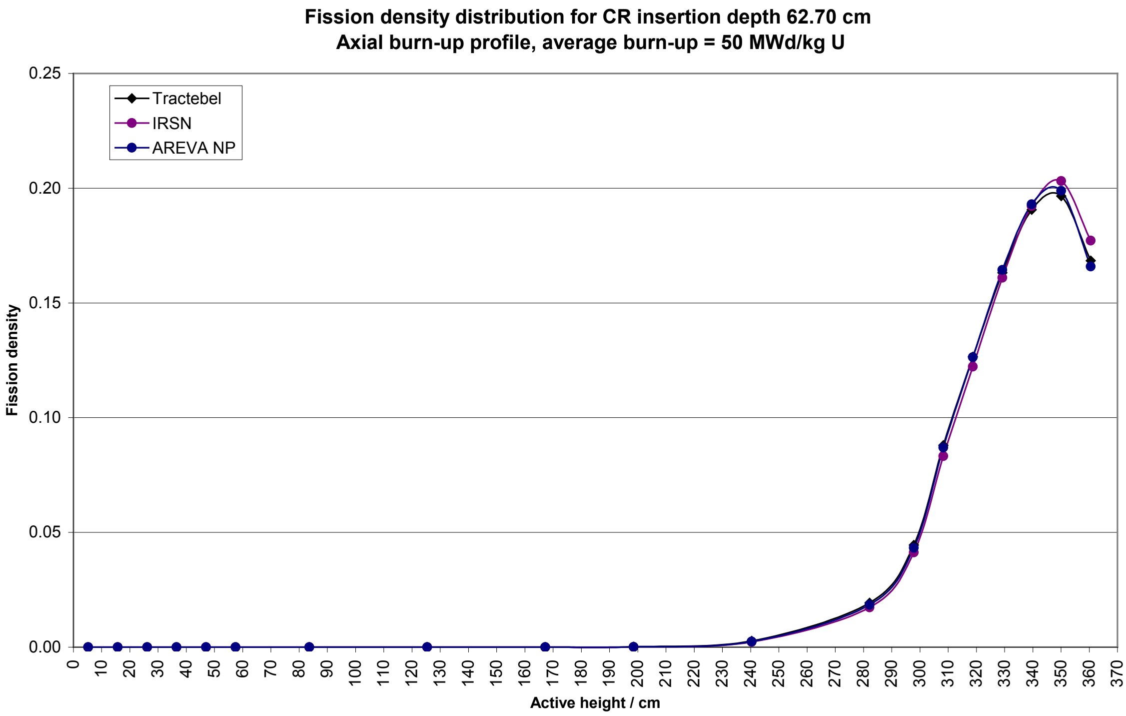


Figure 8.45b

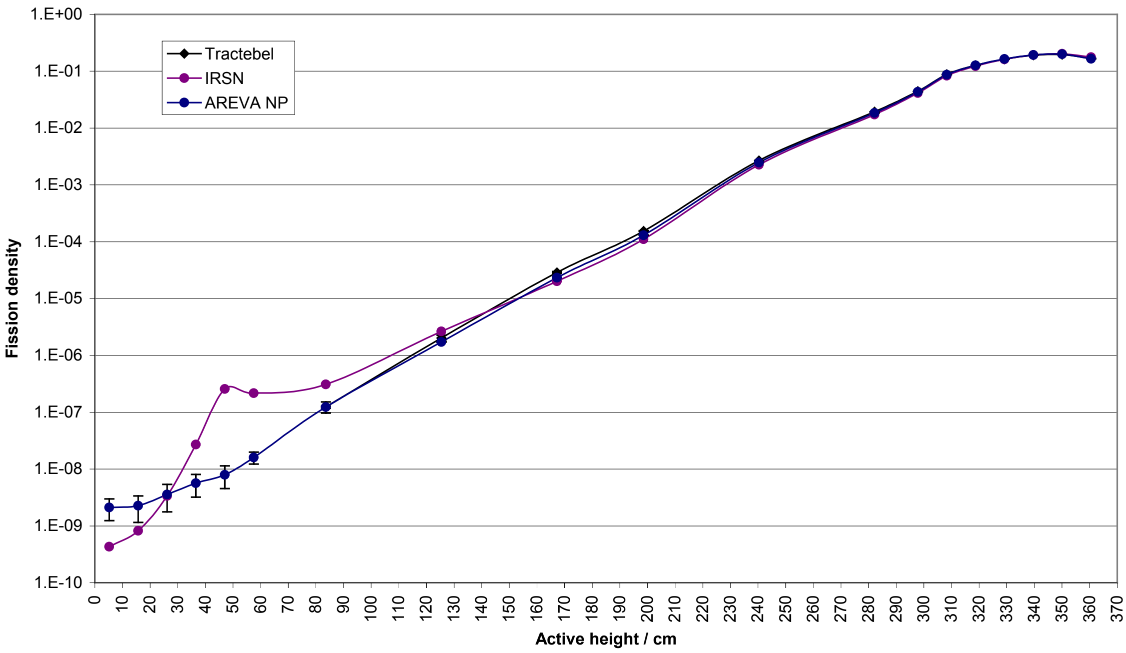


Figure 8.46: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.50)

Figure 8.46a

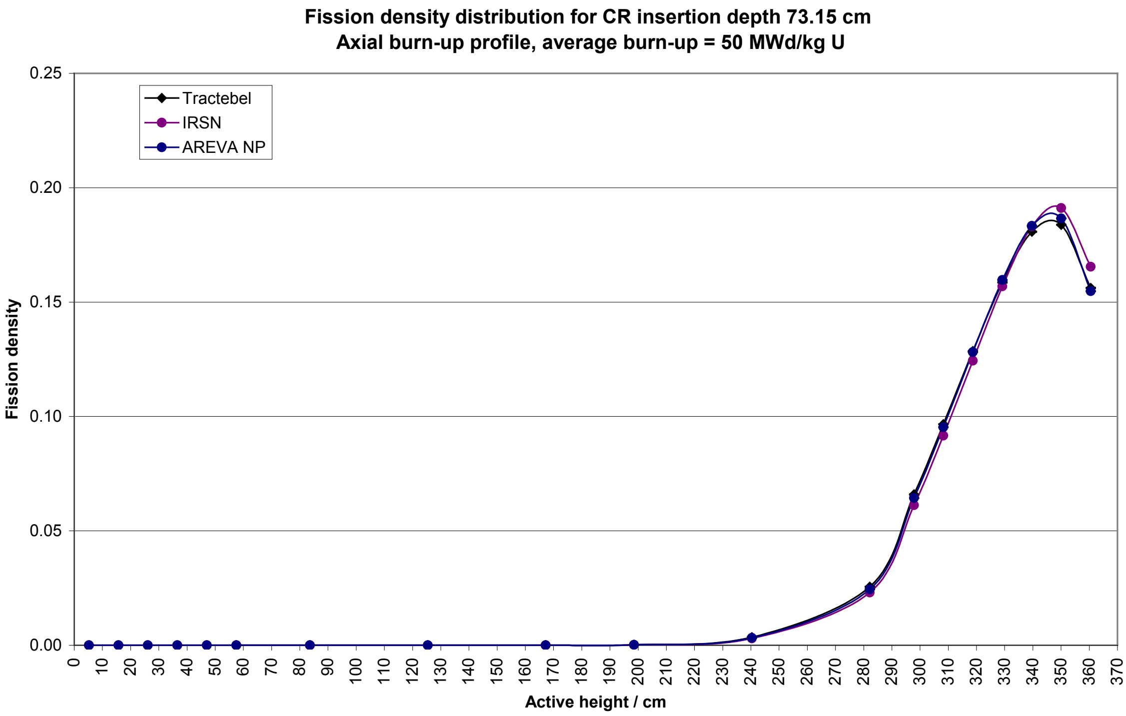


Figure 8.46b

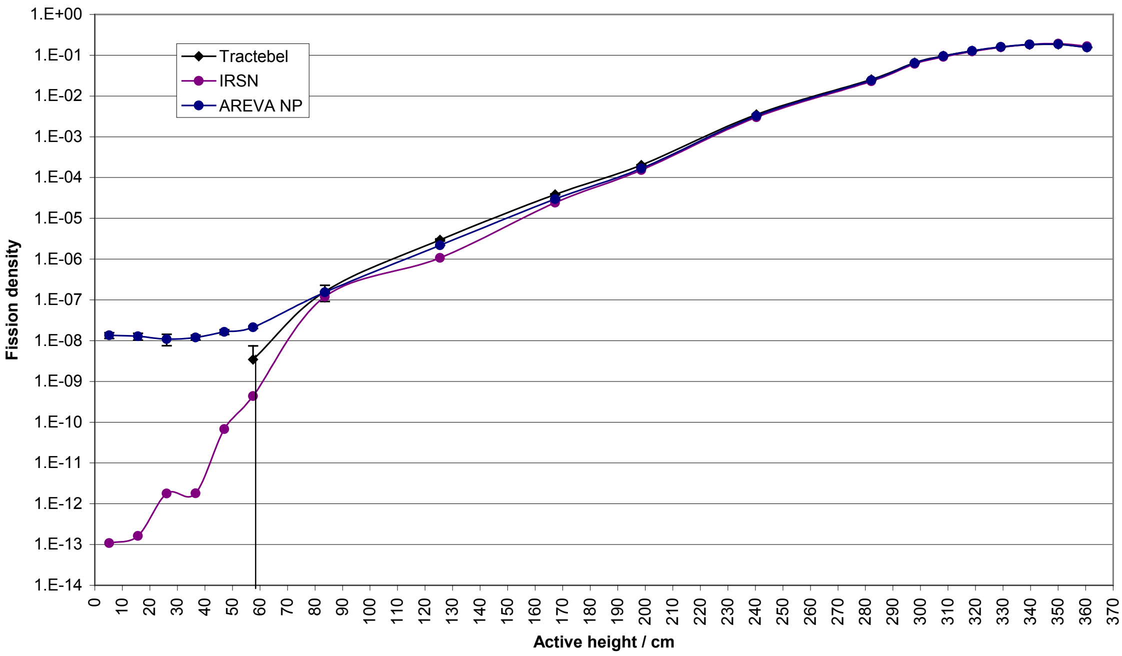


Figure 8.47: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.51)

Figure 8.47a

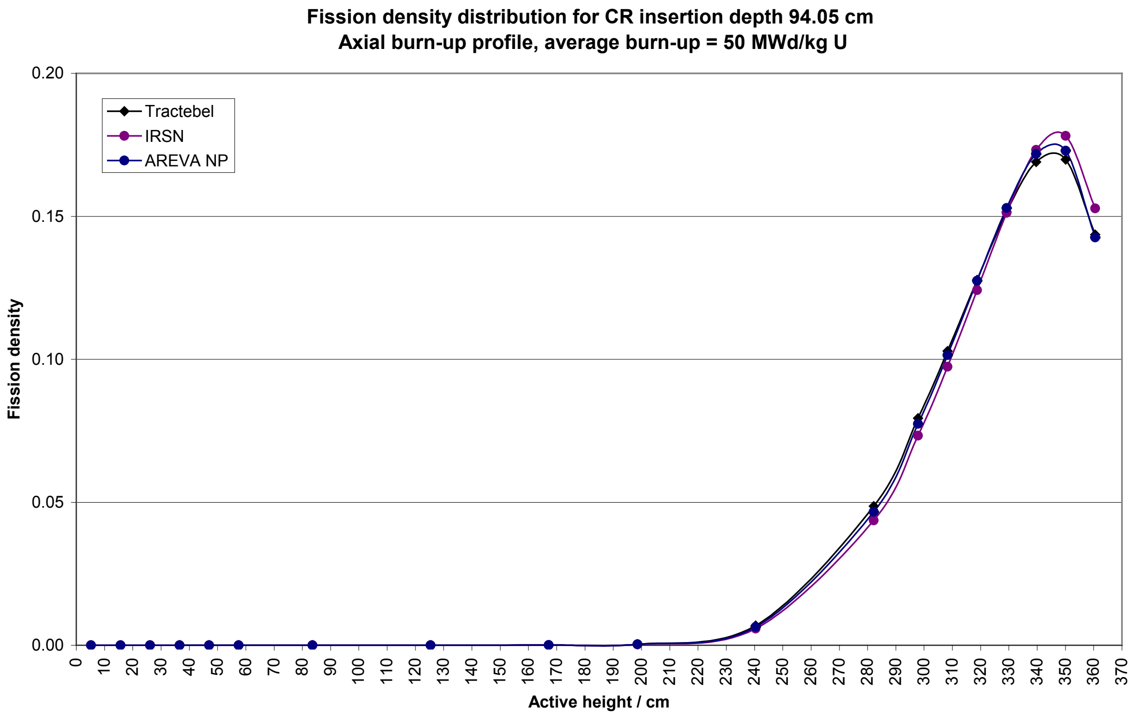


Figure 8.47b

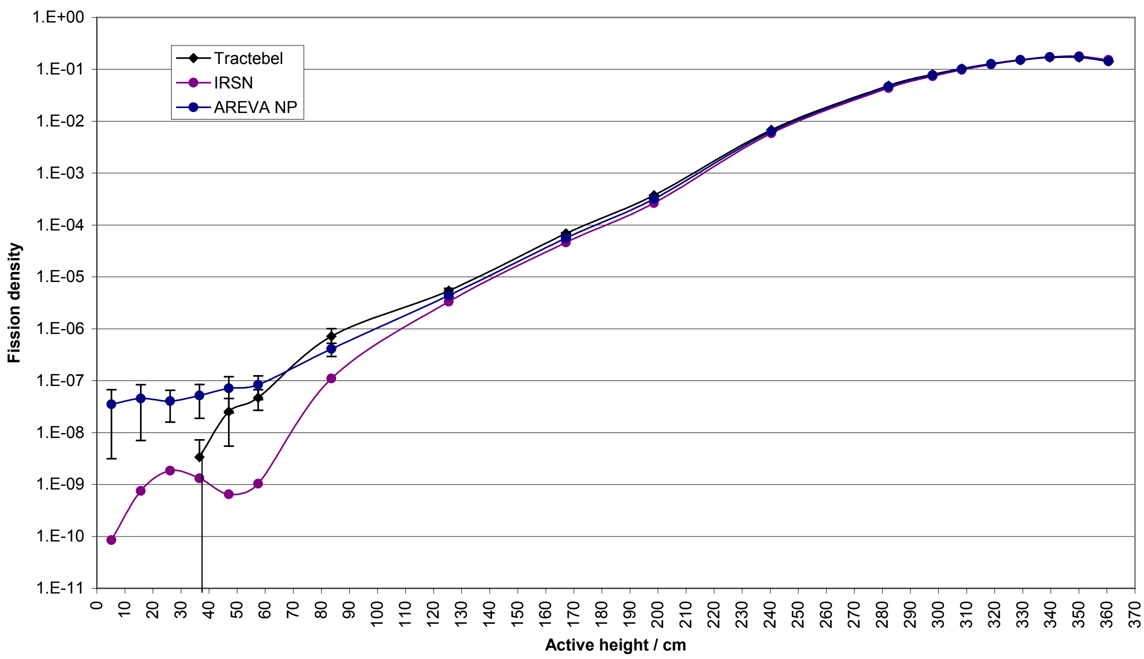


Figure 8.48: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.52)

Figure 8.48a

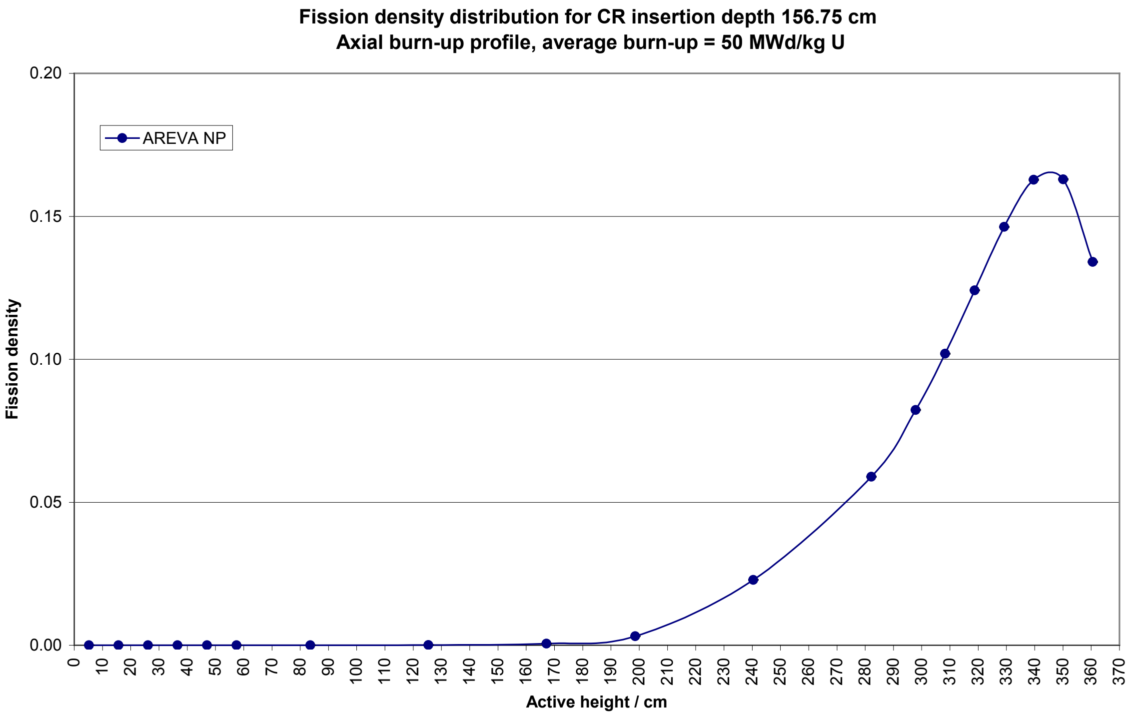


Figure 8.48b

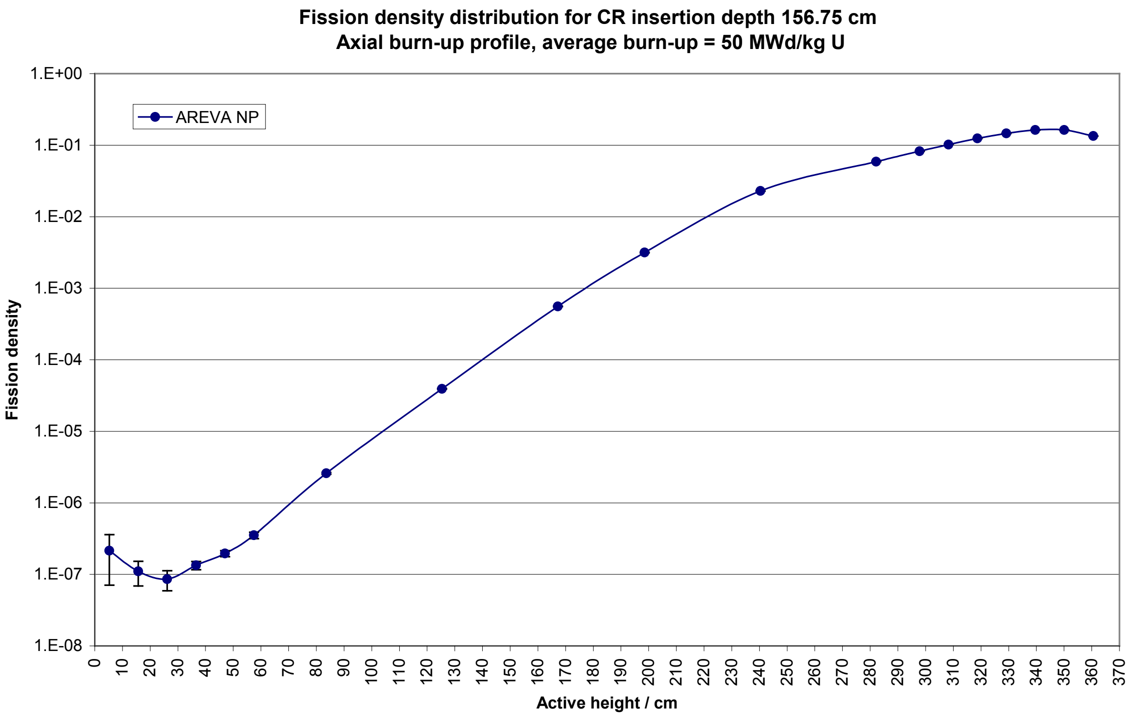


Figure 8.49: Results from the contributors for the 50 MWd/kg U axial burn-up profile: Fission densities (see Table 8.53)

Figure 8.49a

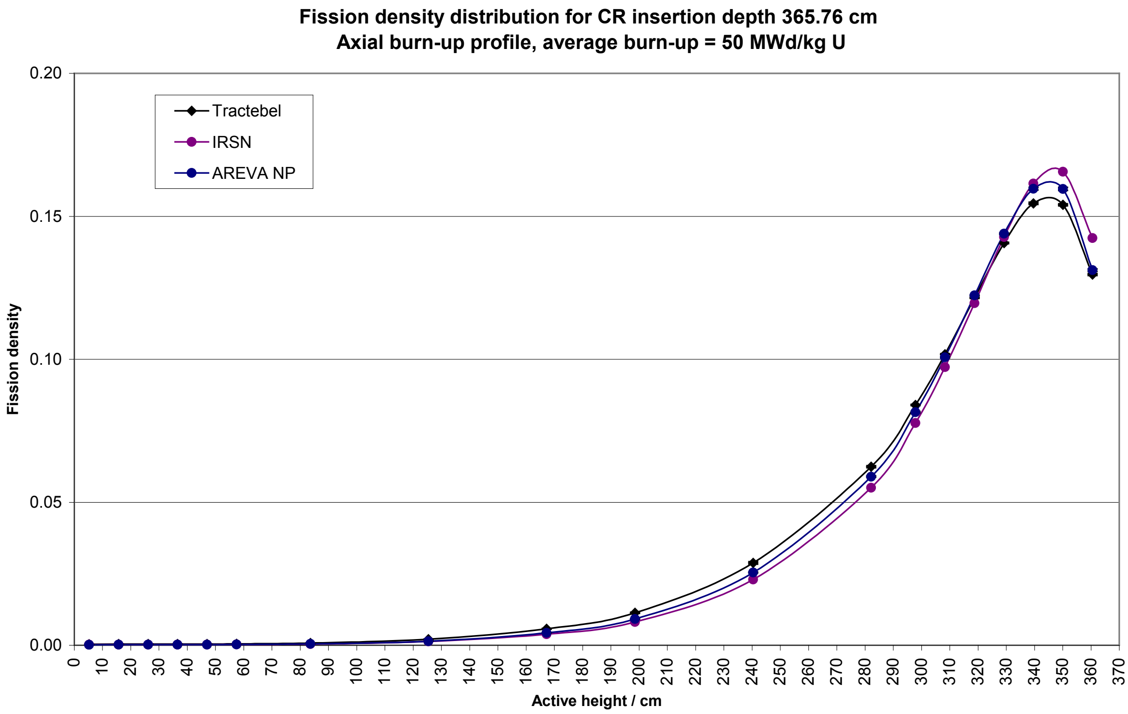


Figure 8.49b

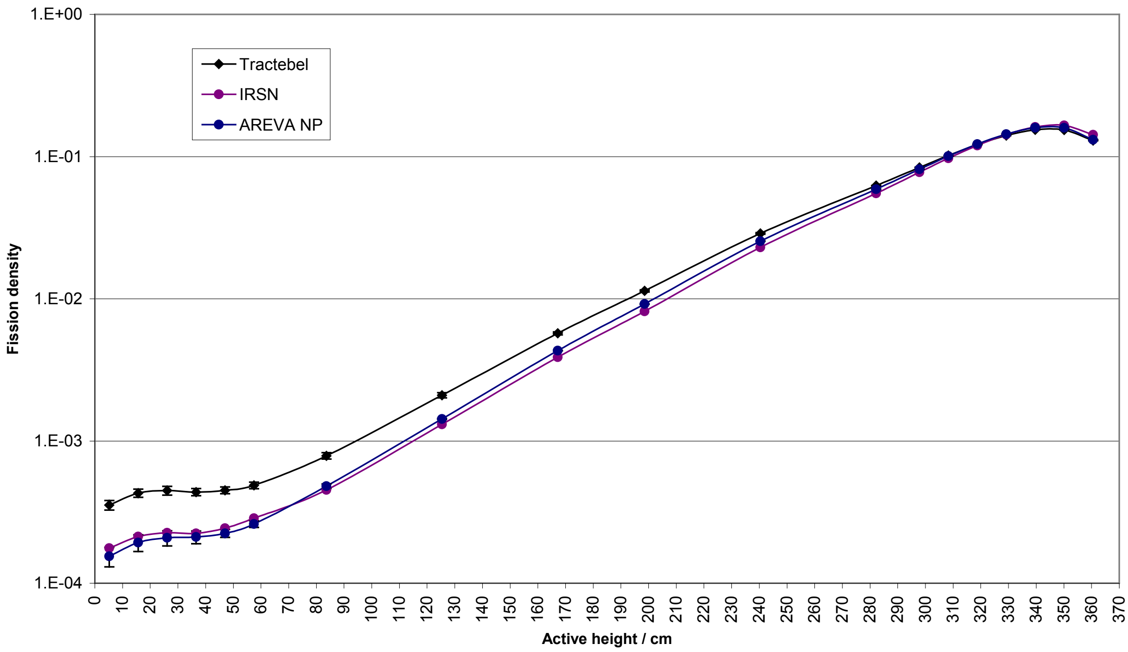


Figure 8.50: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.54)

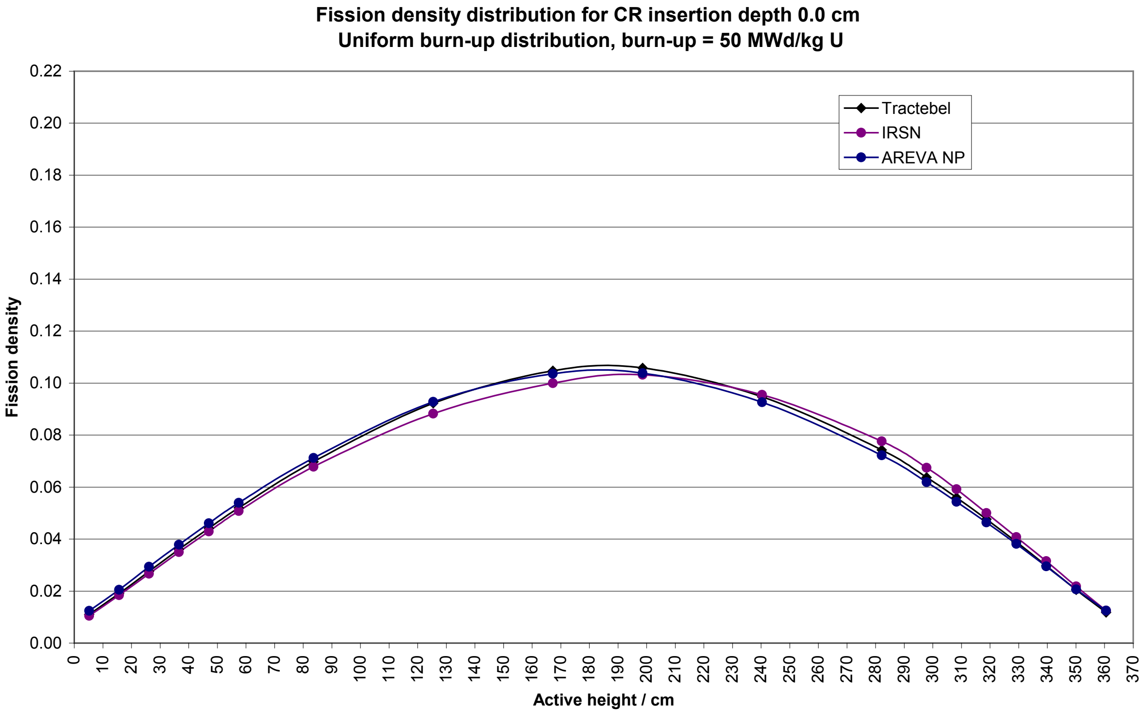


Figure 8.51: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.55)

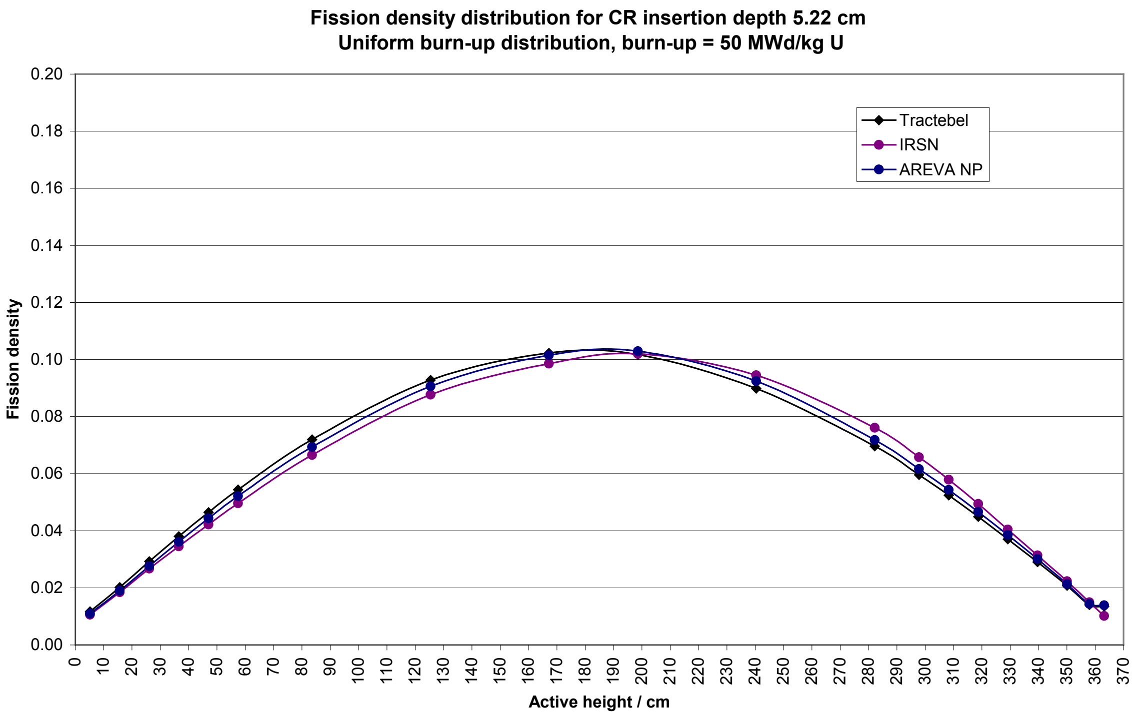


Figure 8.52: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.56)

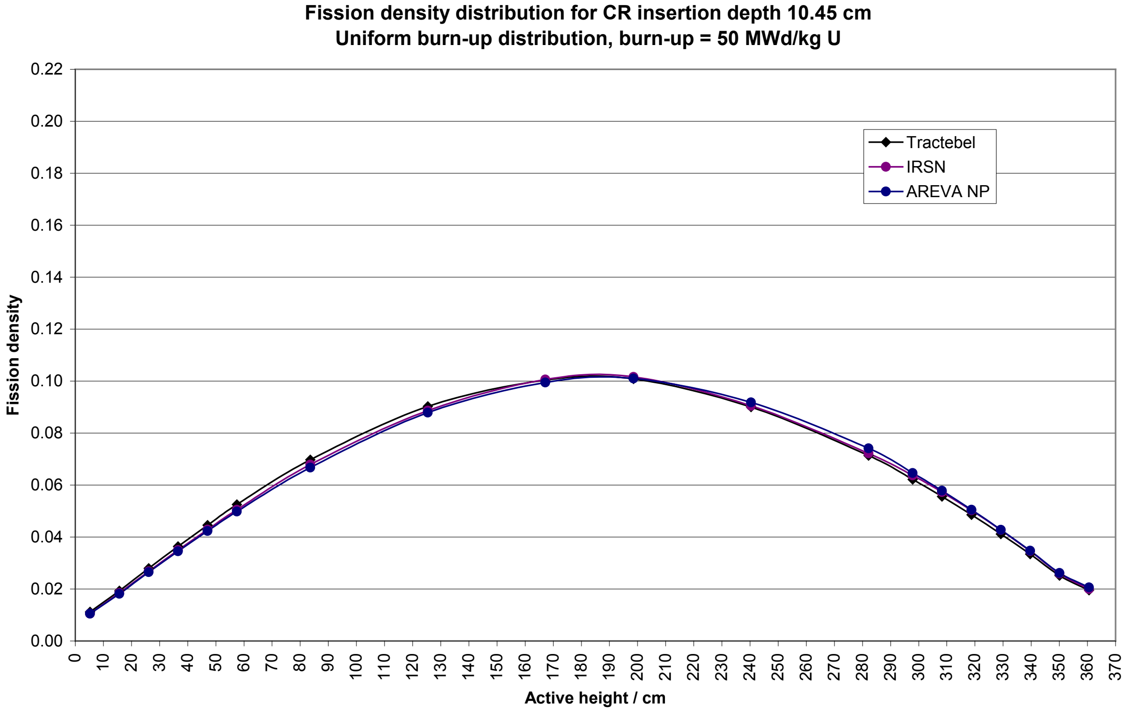


Figure 8.53: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.57)

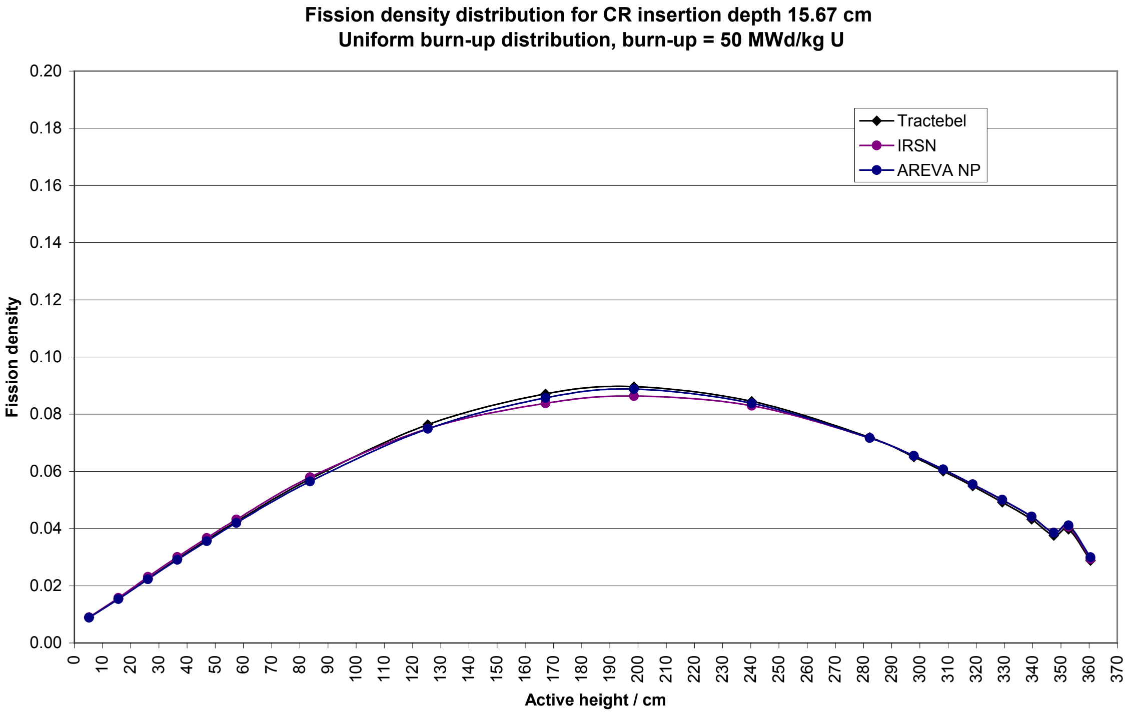


Figure 8.54: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.58)

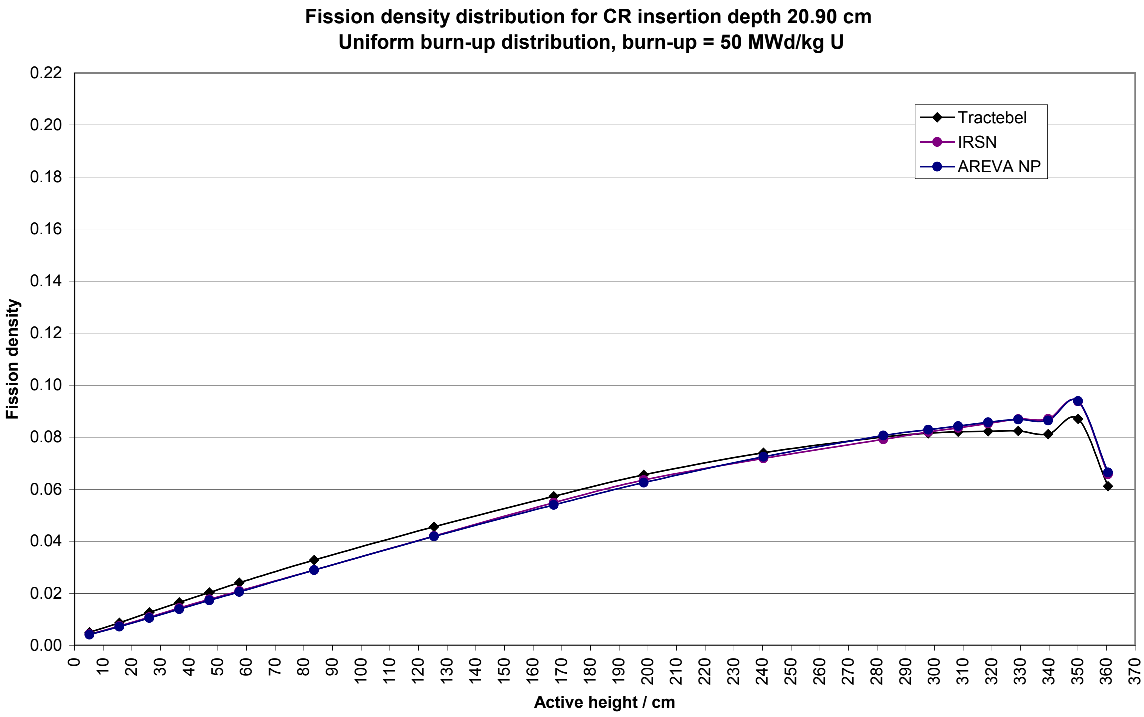


Figure 8.55: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.59)

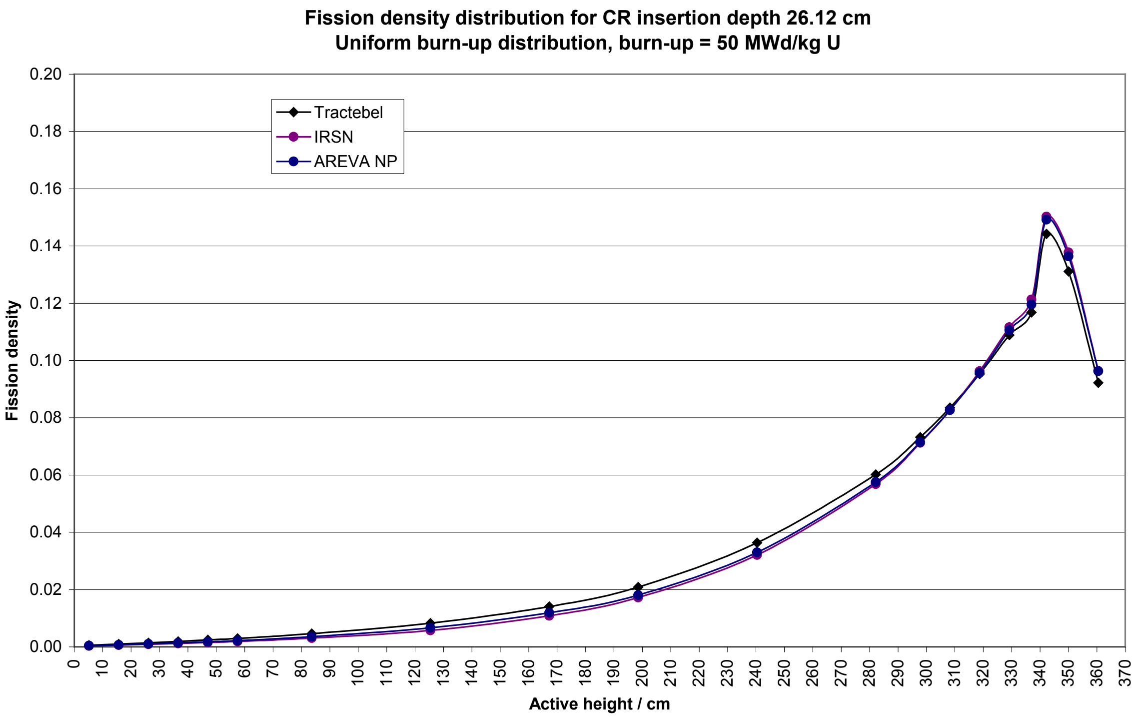


Figure 8.56: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.60)

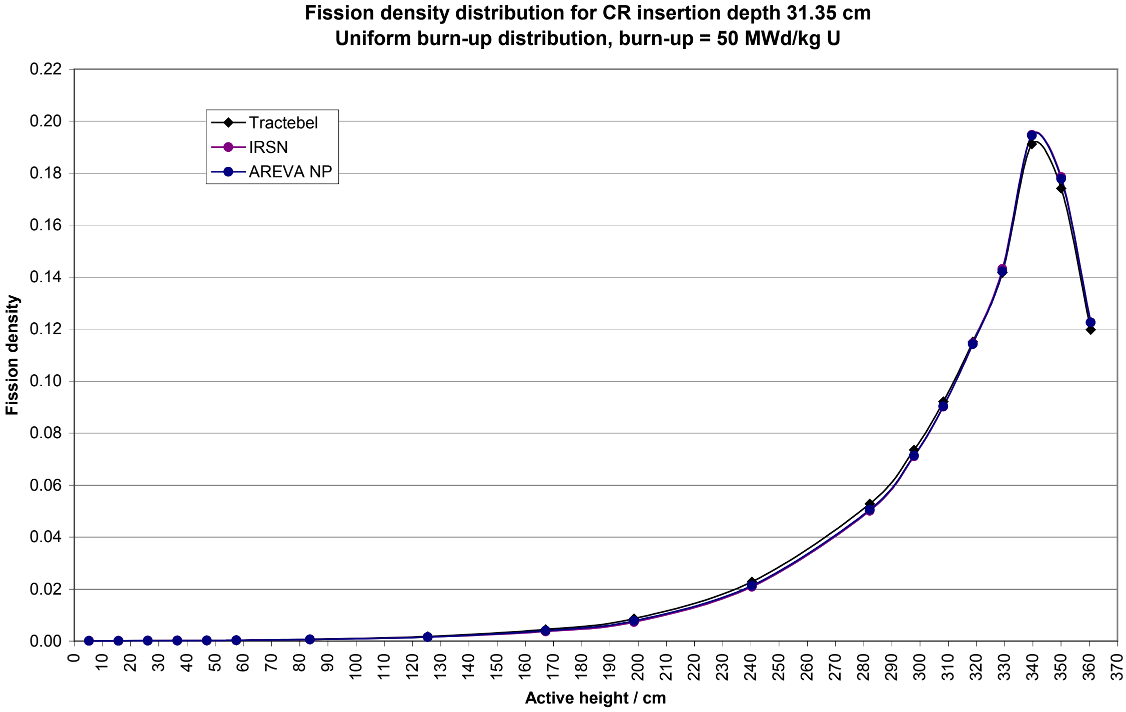


Figure 8.57: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.61)

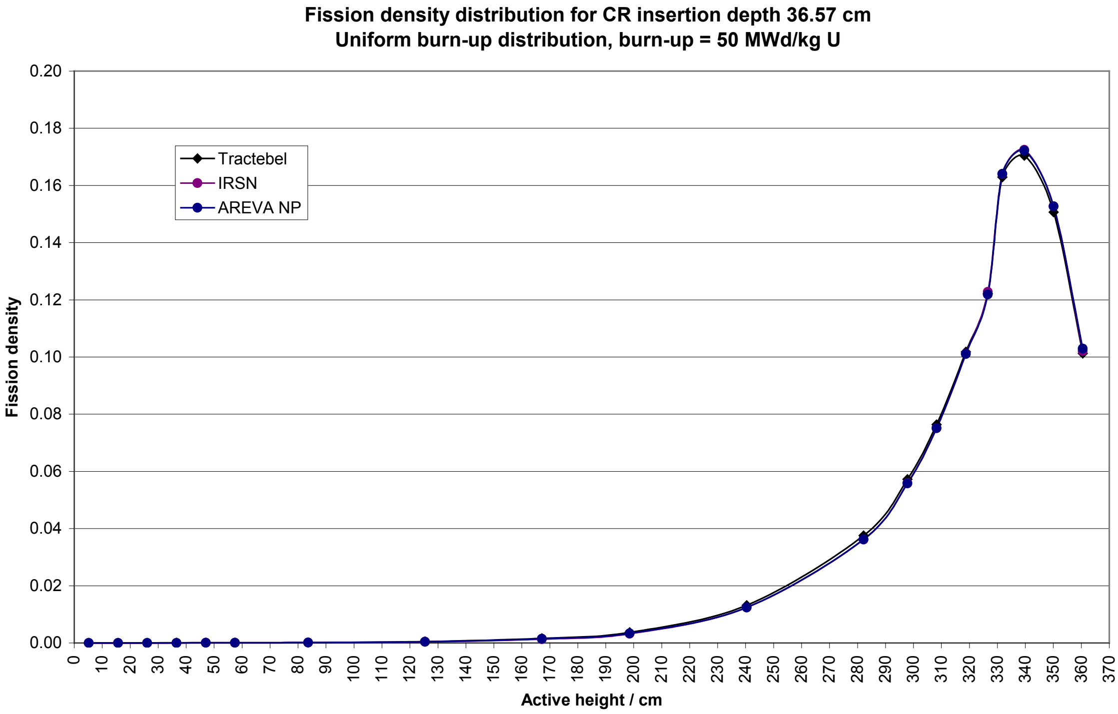


Figure 8.58: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.62)

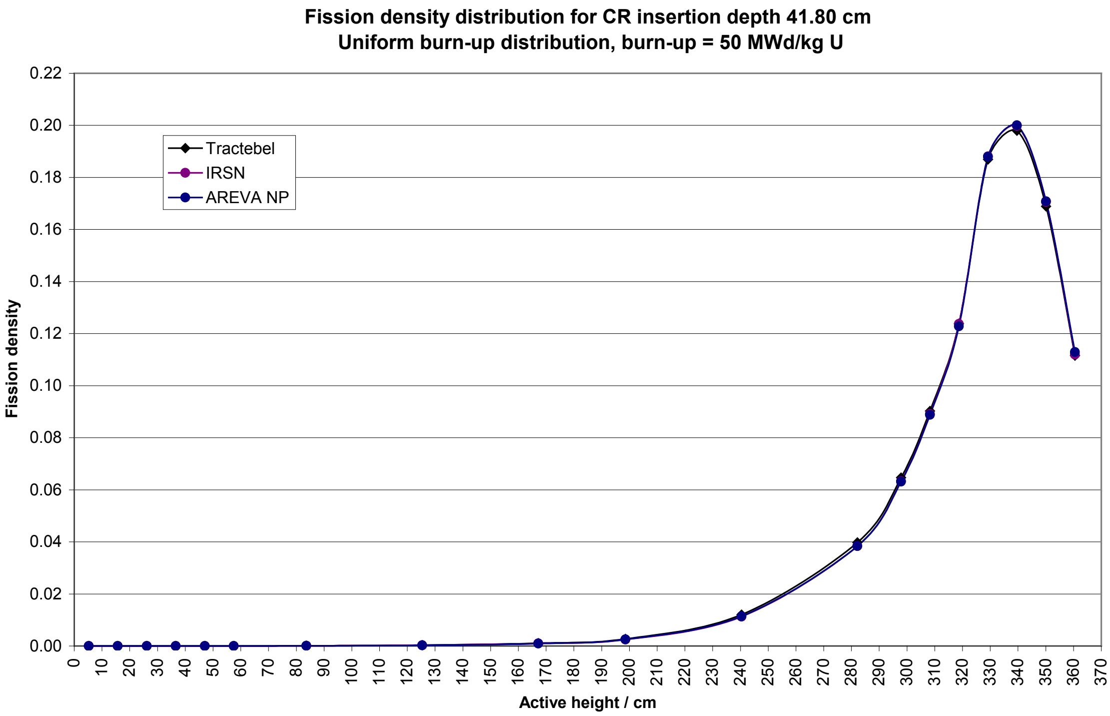


Figure 8.59: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.63)

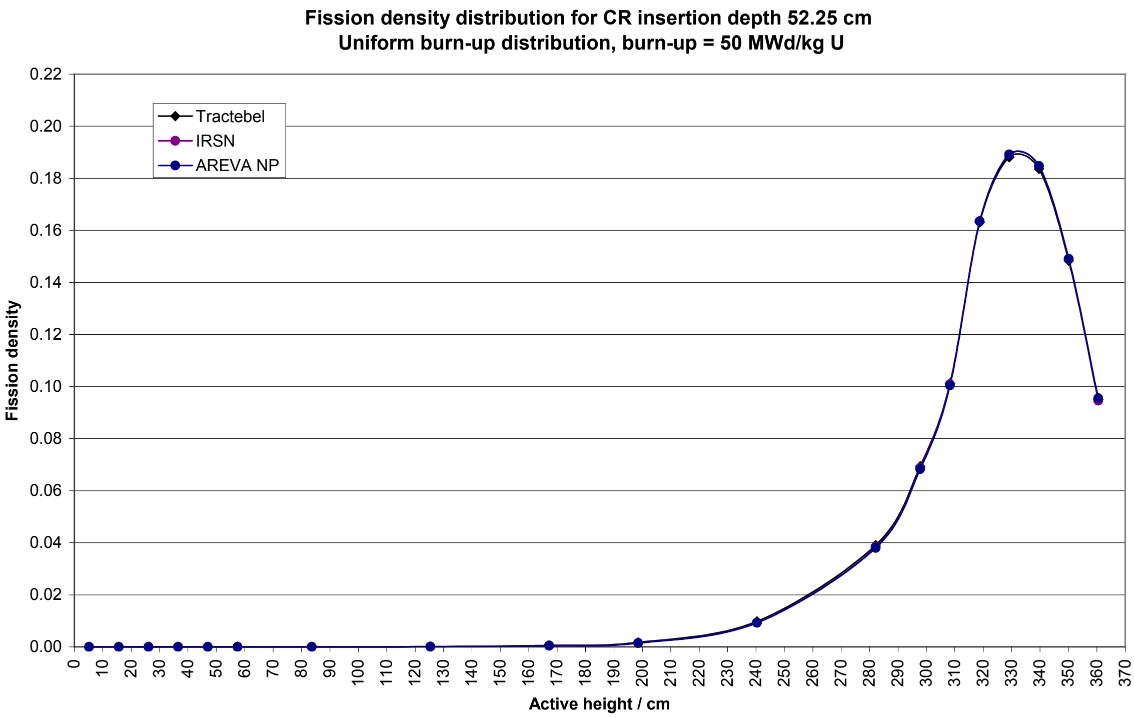


Figure 8.60: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.64)

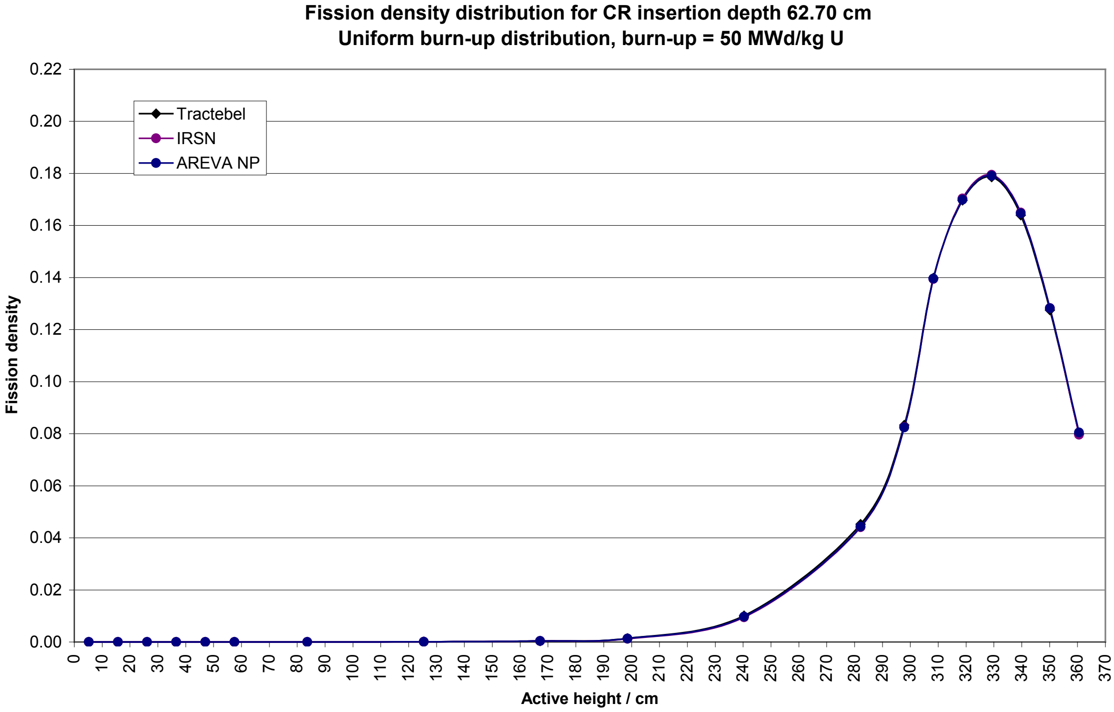


Figure 8.61: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.65)

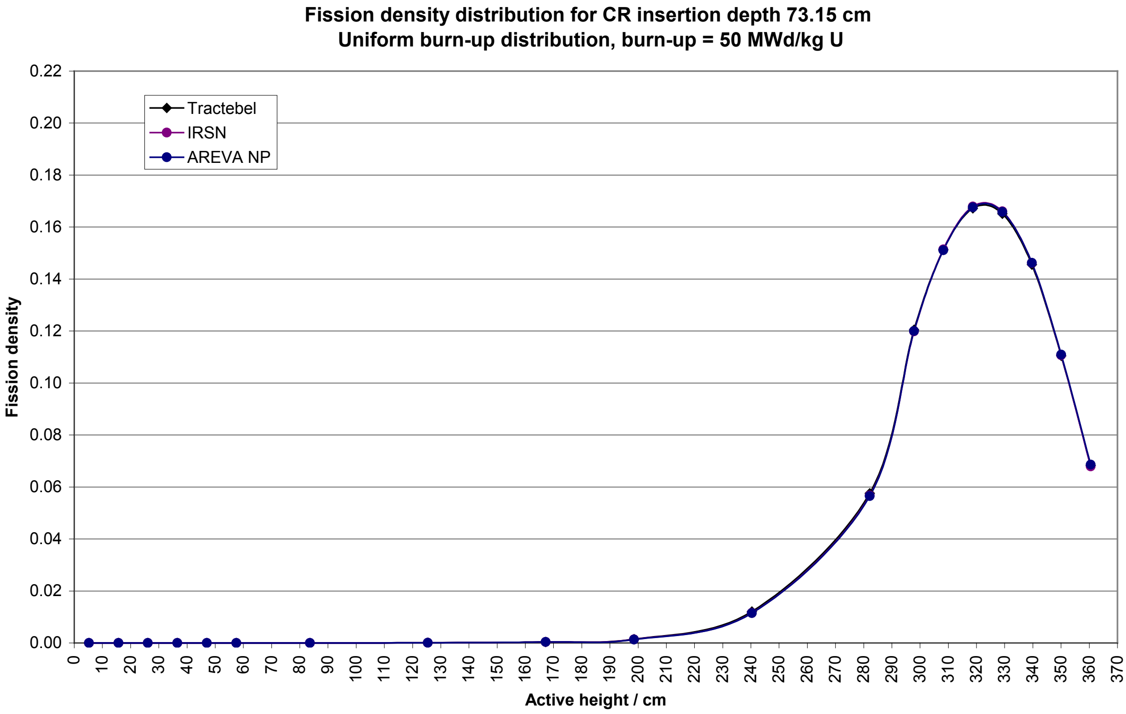


Figure 8.62: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.66)

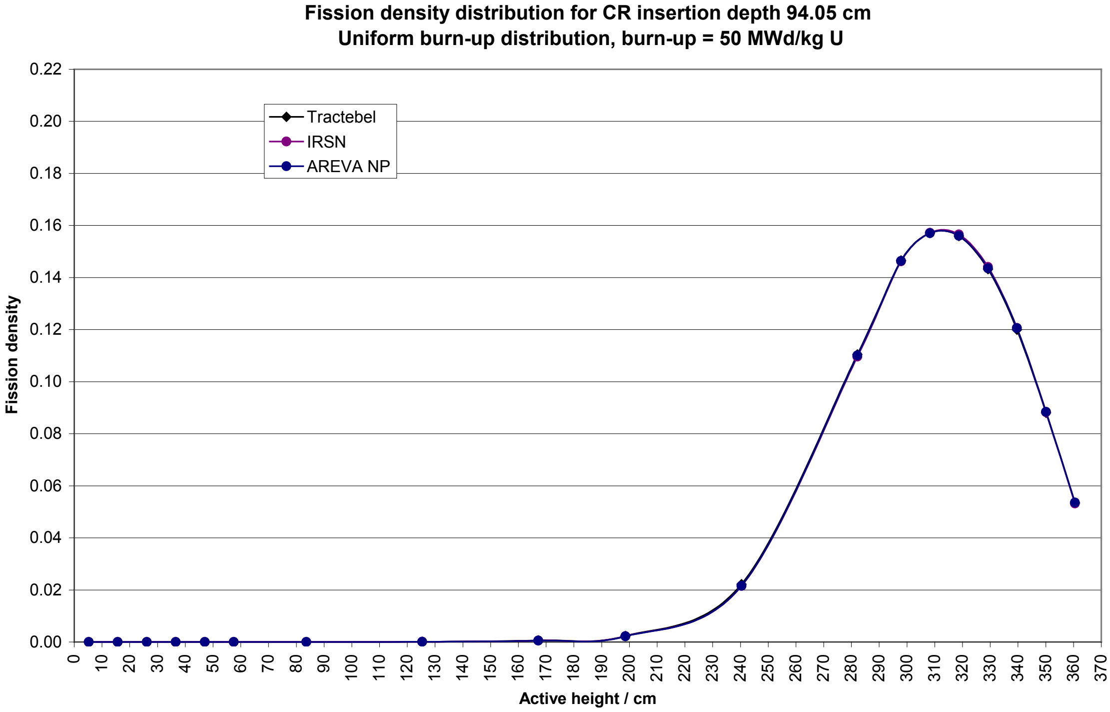


Figure 8.63: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.67)

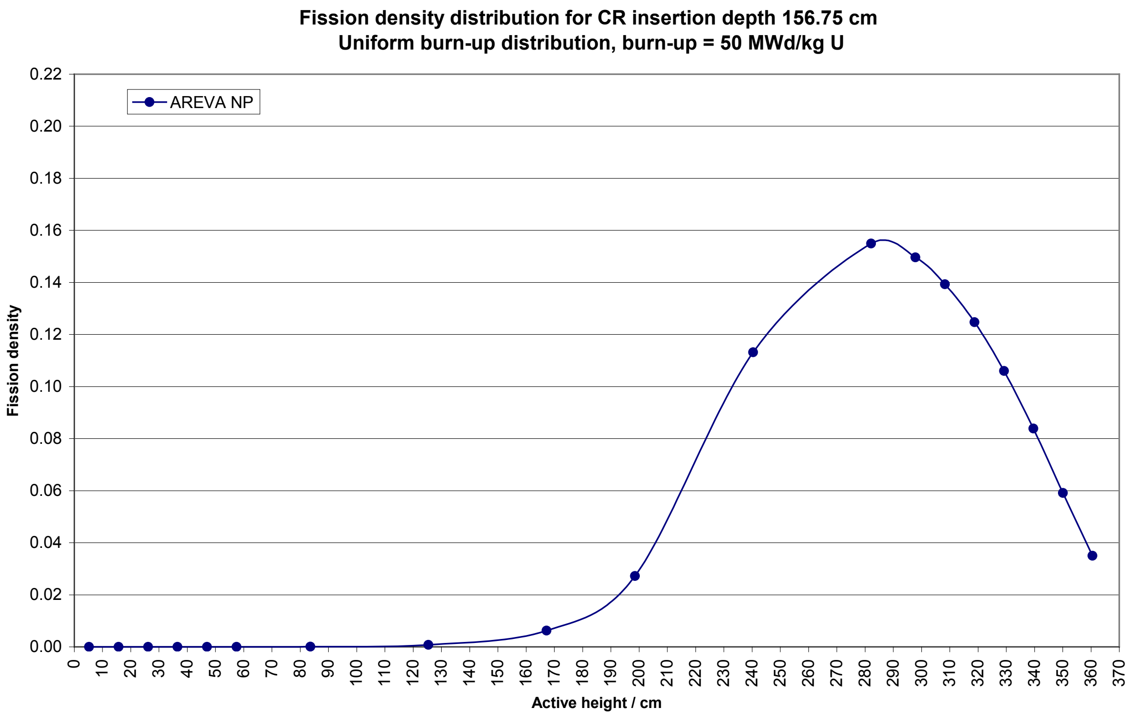


Figure 8.64: Results from the contributors for the 50 MWd/kg U uniform burn-up distribution: Fission densities (see Table 8.68)

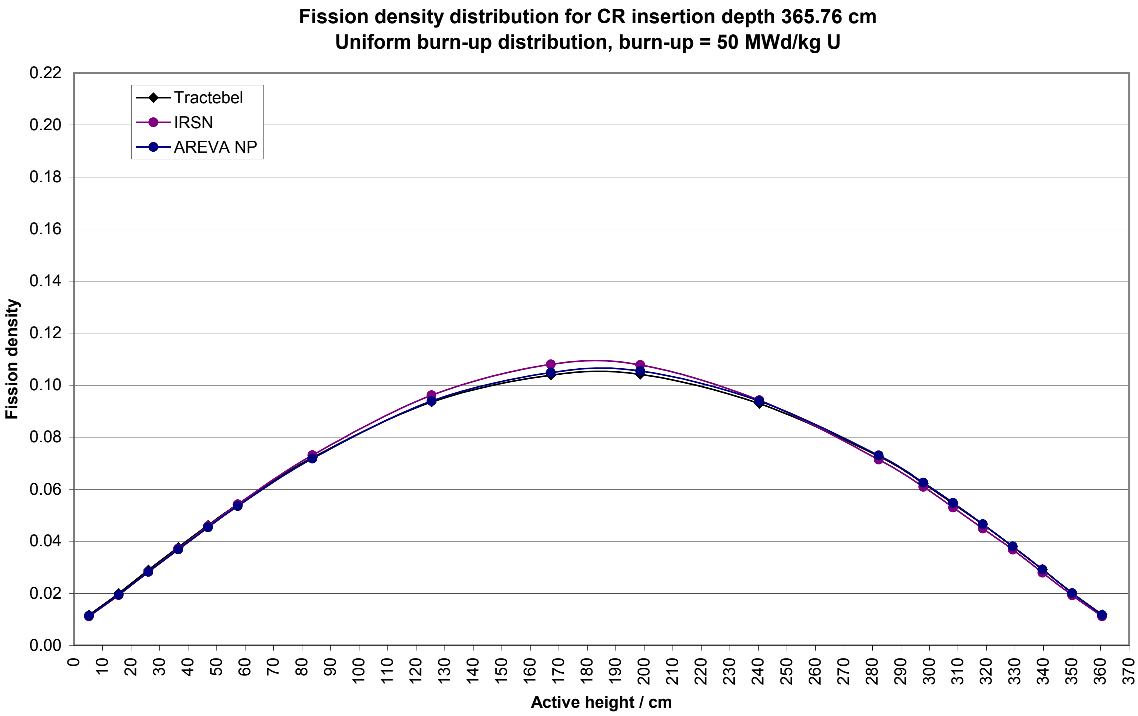


Figure 9.1: 30 MWd/kg U axial burn-up profile: Relative deviations of the contributors' k_{eff} values from their arithmetic mean (9.2) (see Table 9.1)

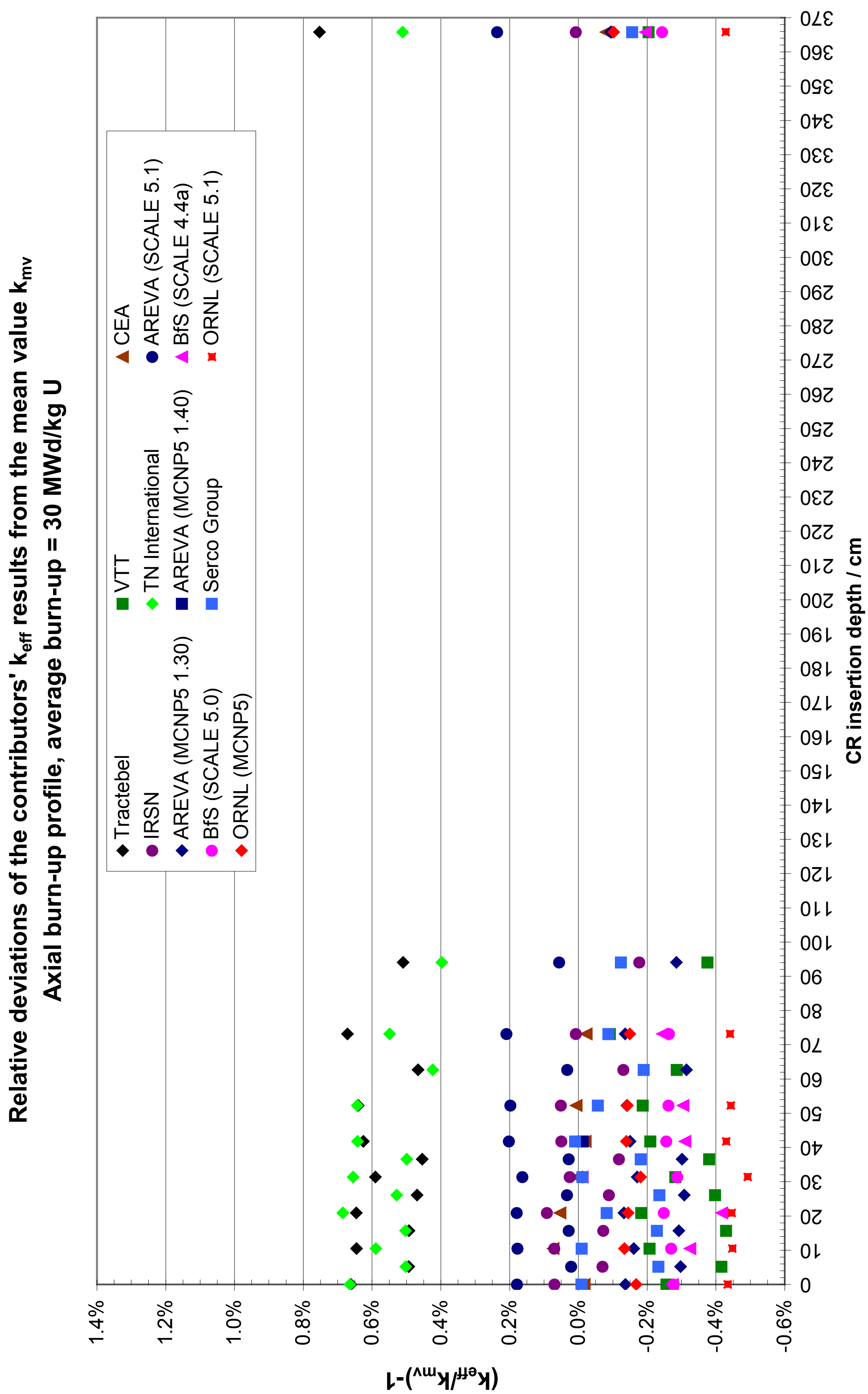


Figure 9.2: 30 MWd/kg U uniform burn-up distribution: Relative deviations of the contributors' k_{eff} values from their arithmetic mean (9.2) (see Table 9.2)

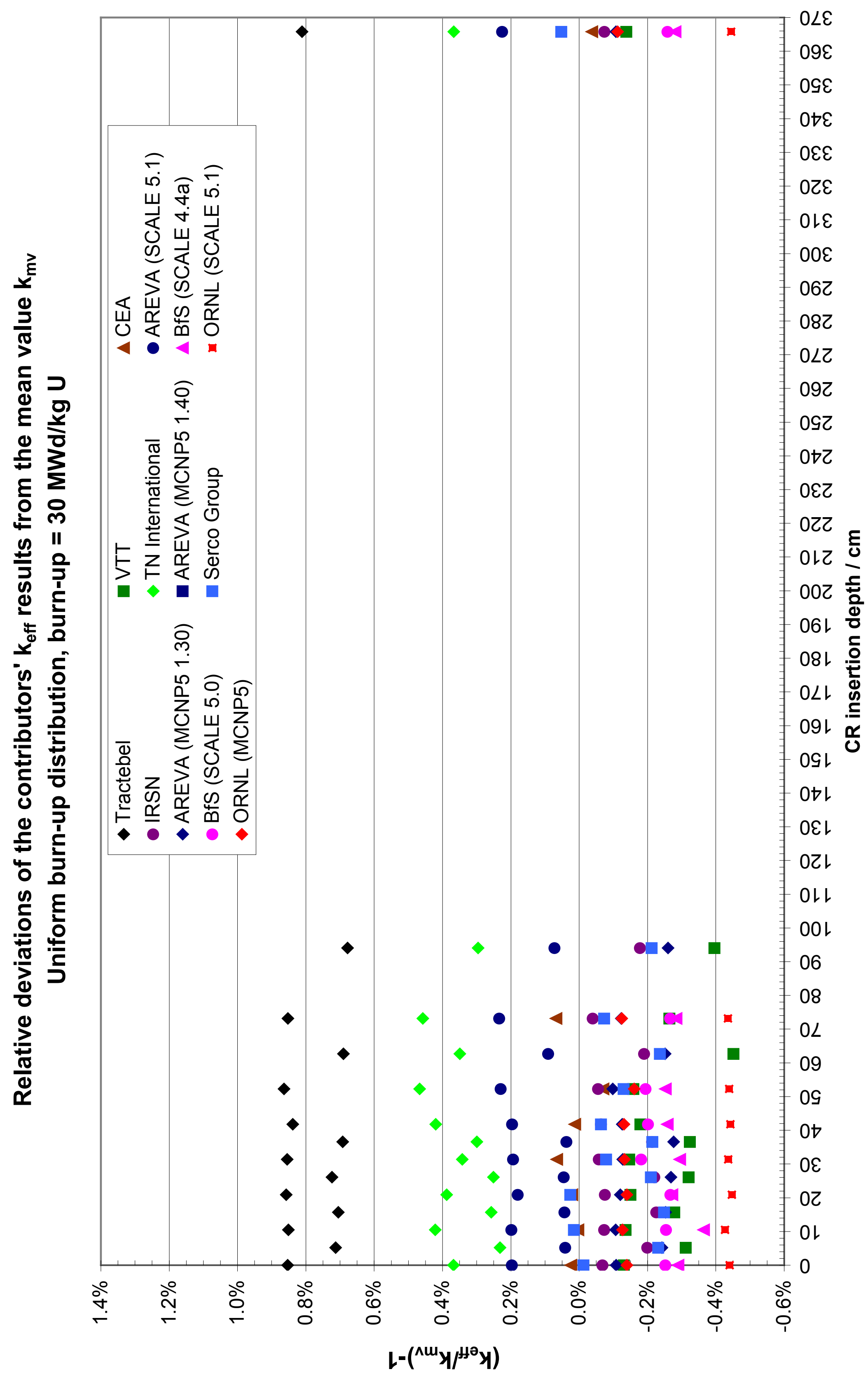


Figure 9.3: 50 MWd/kg U axial burn-up profile: Relative deviations of the contributors' k_{eff} values from their arithmetic mean (9.2) (see Table 9.3)

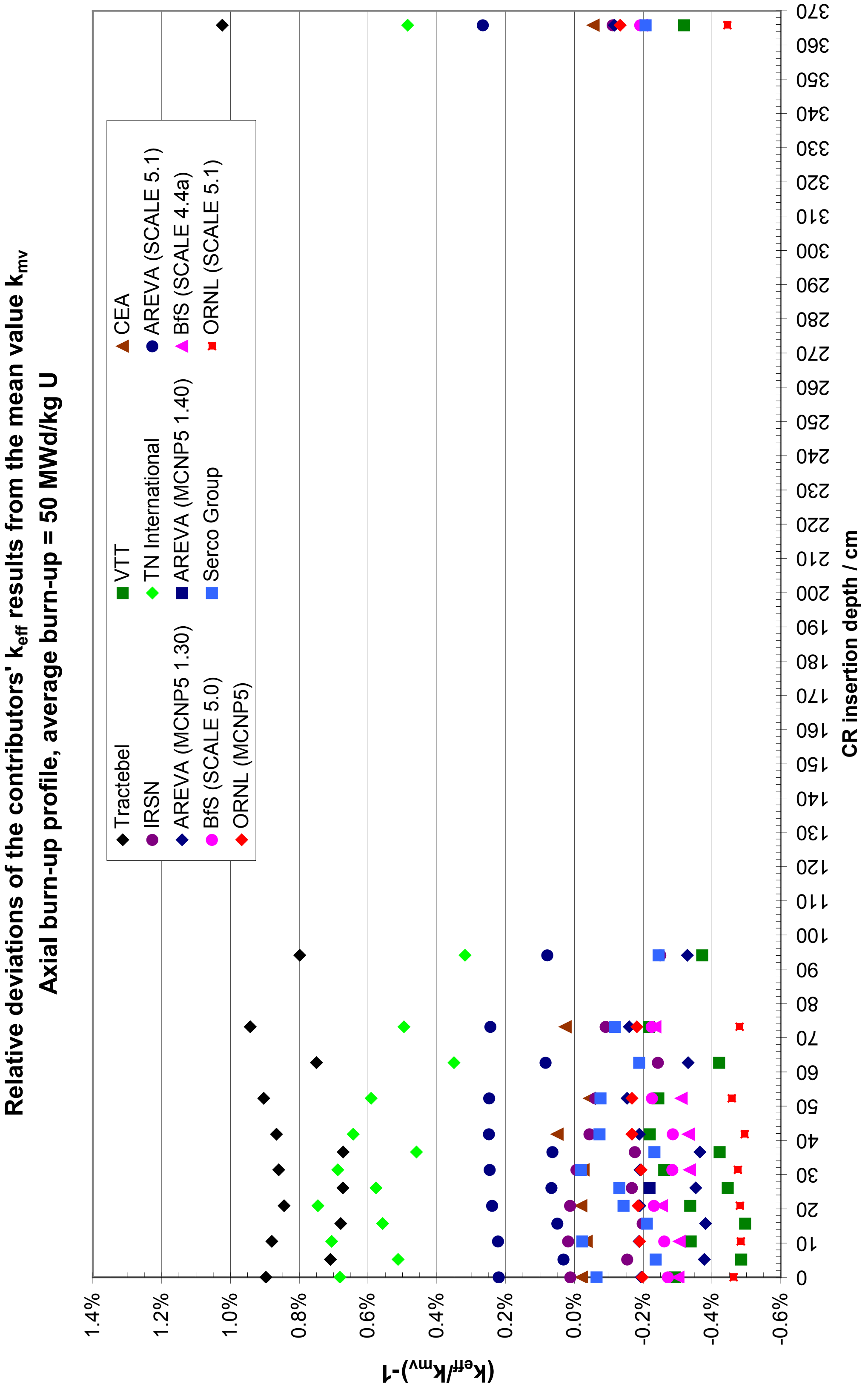


Figure 9.4: 50 MWd/kg U uniform burn-up distribution: Relative deviations of the contributors' k_{eff} values from their arithmetic mean (9.2) (see Table 9.4)

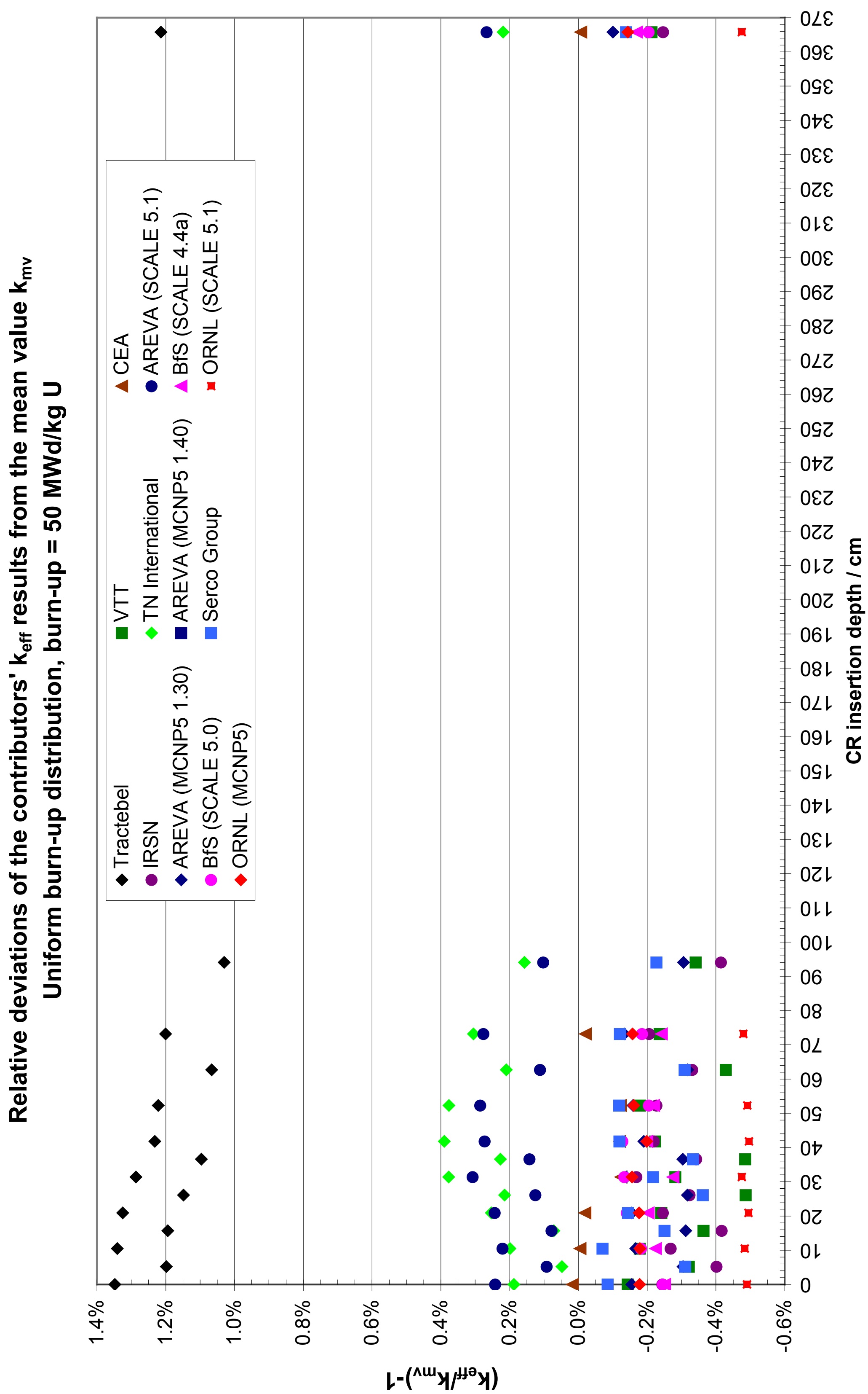


Figure 9.5: SCALE k_{eff} results for the 30 MWd/kg U axial burn-up profile

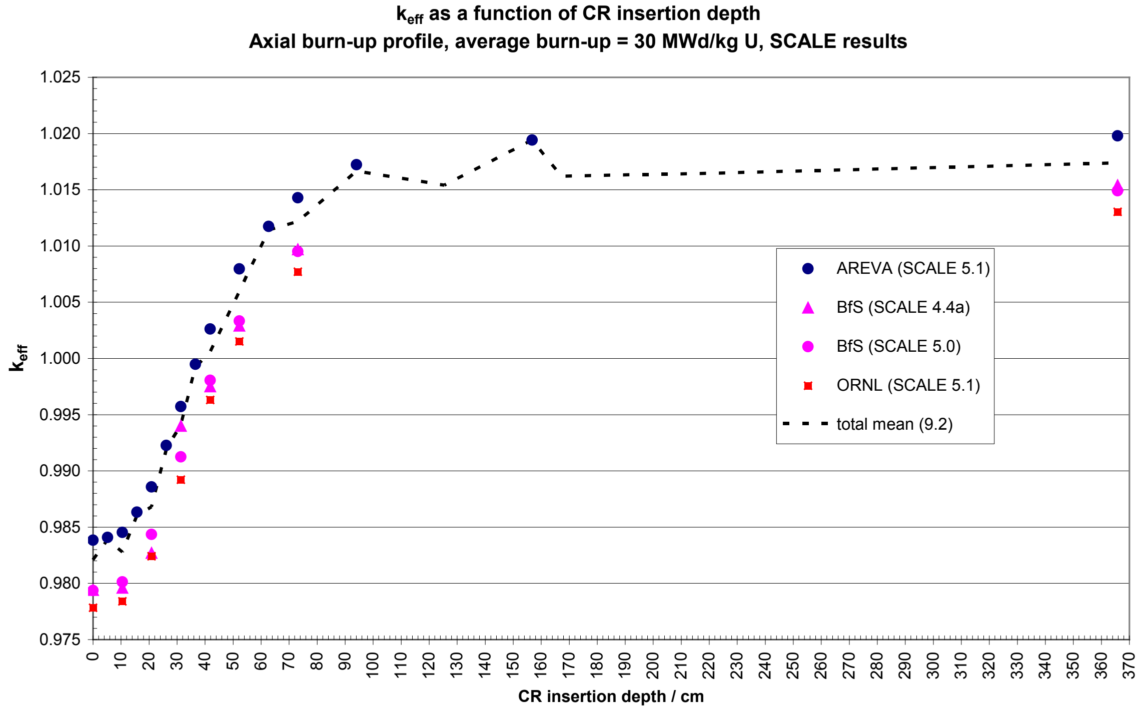


Figure 9.6: SCALE k_{eff} results for the 30 MWd/kg U uniform burn-up distribution

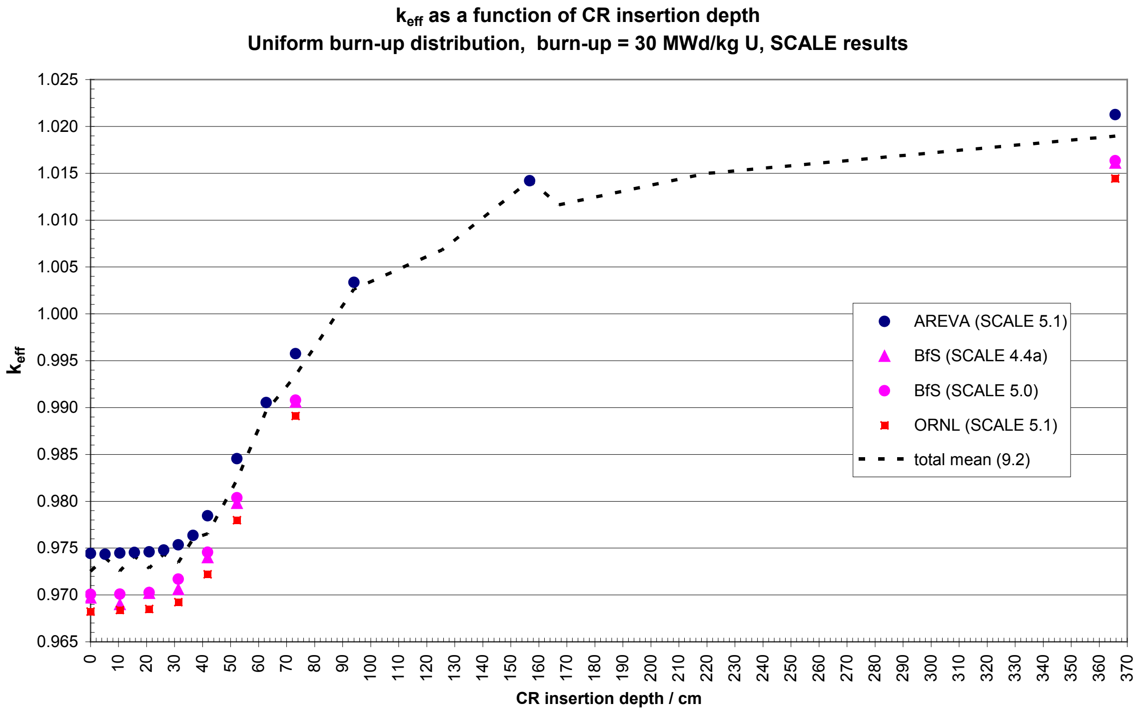


Figure 9.7: SCALE k_{eff} results for the 50 MWd/kg U axial burn-up profile

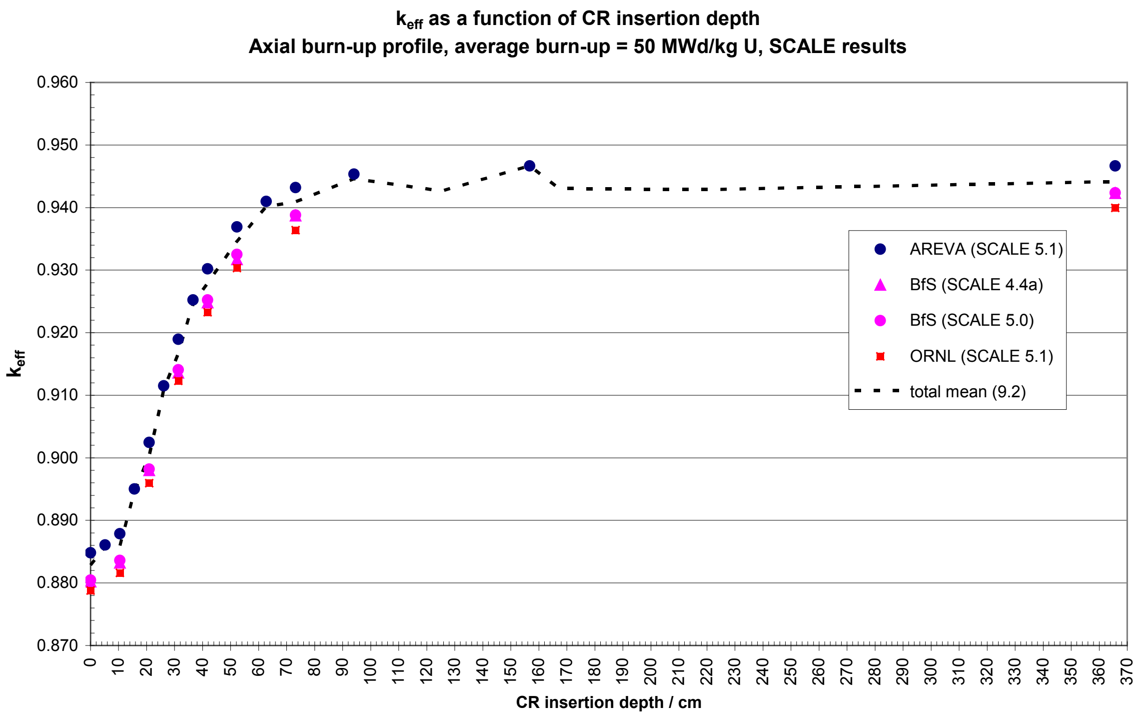


Figure 9.8: SCALE k_{eff} results for the 50 MWd/kg U uniform burn-up distribution

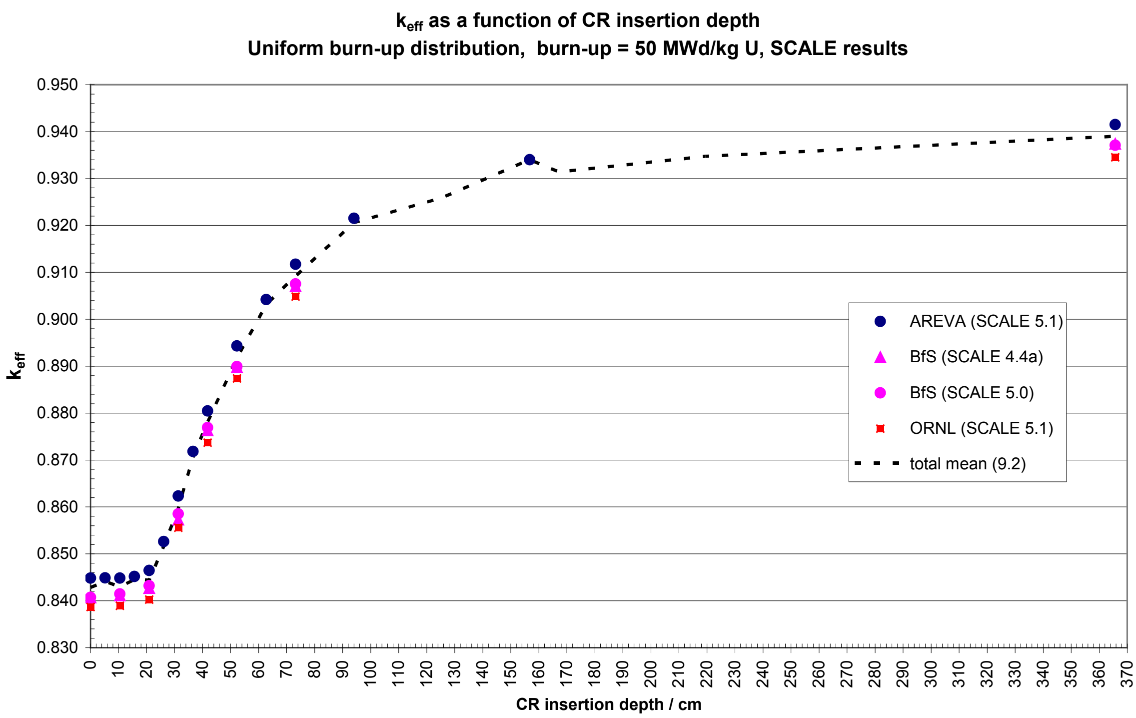


Figure 9.9: 30 MWd/kg U axial burn-up profile:
End effect Δk as a function of the CR insertion depth d_{CR} (see Table 9.6)

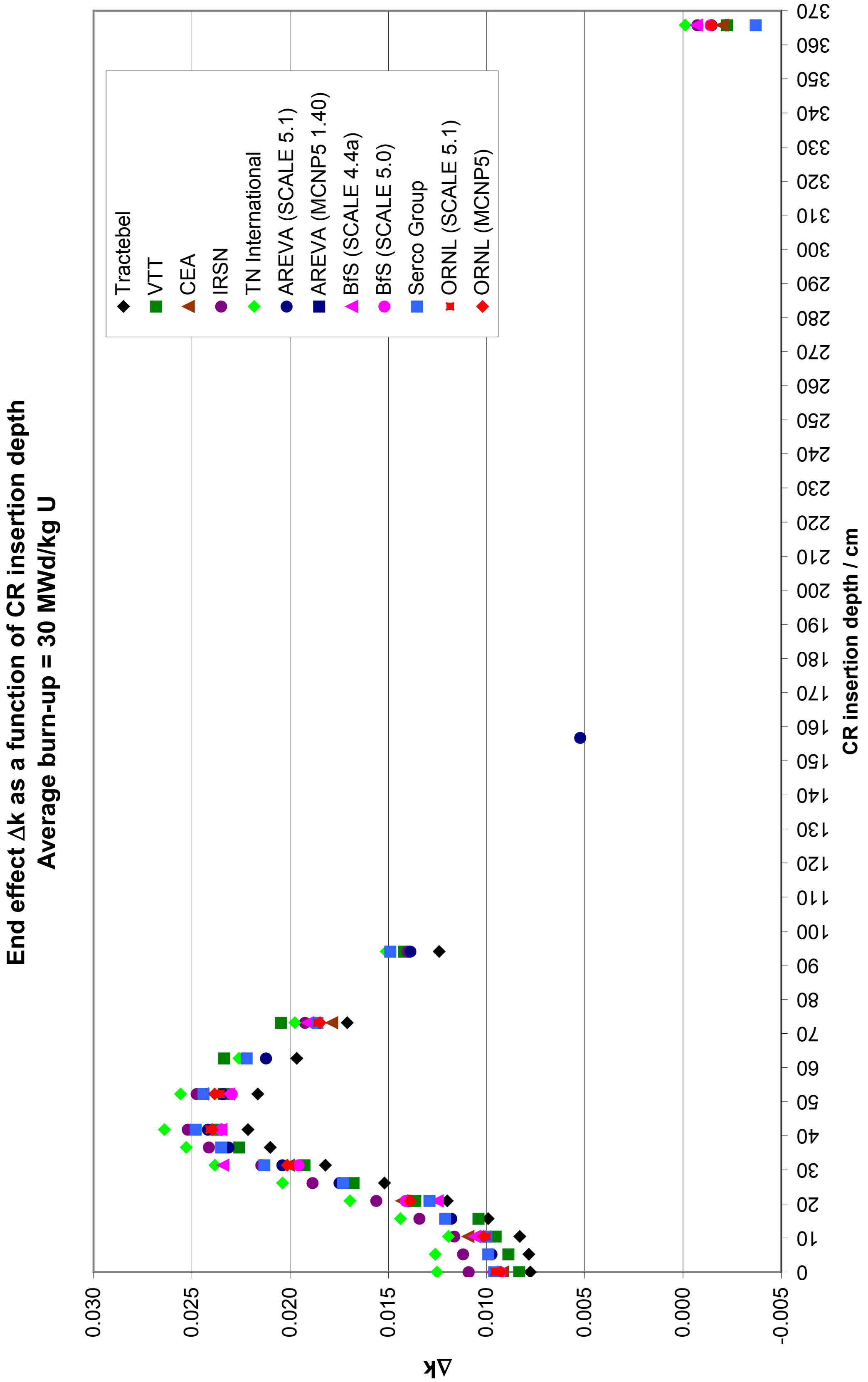


Figure 9.10: 50 MWd/kg U axial burn-up profile:
End effect Δk as a function of the CR insertion depth d_{CR} (see Table 9.9)

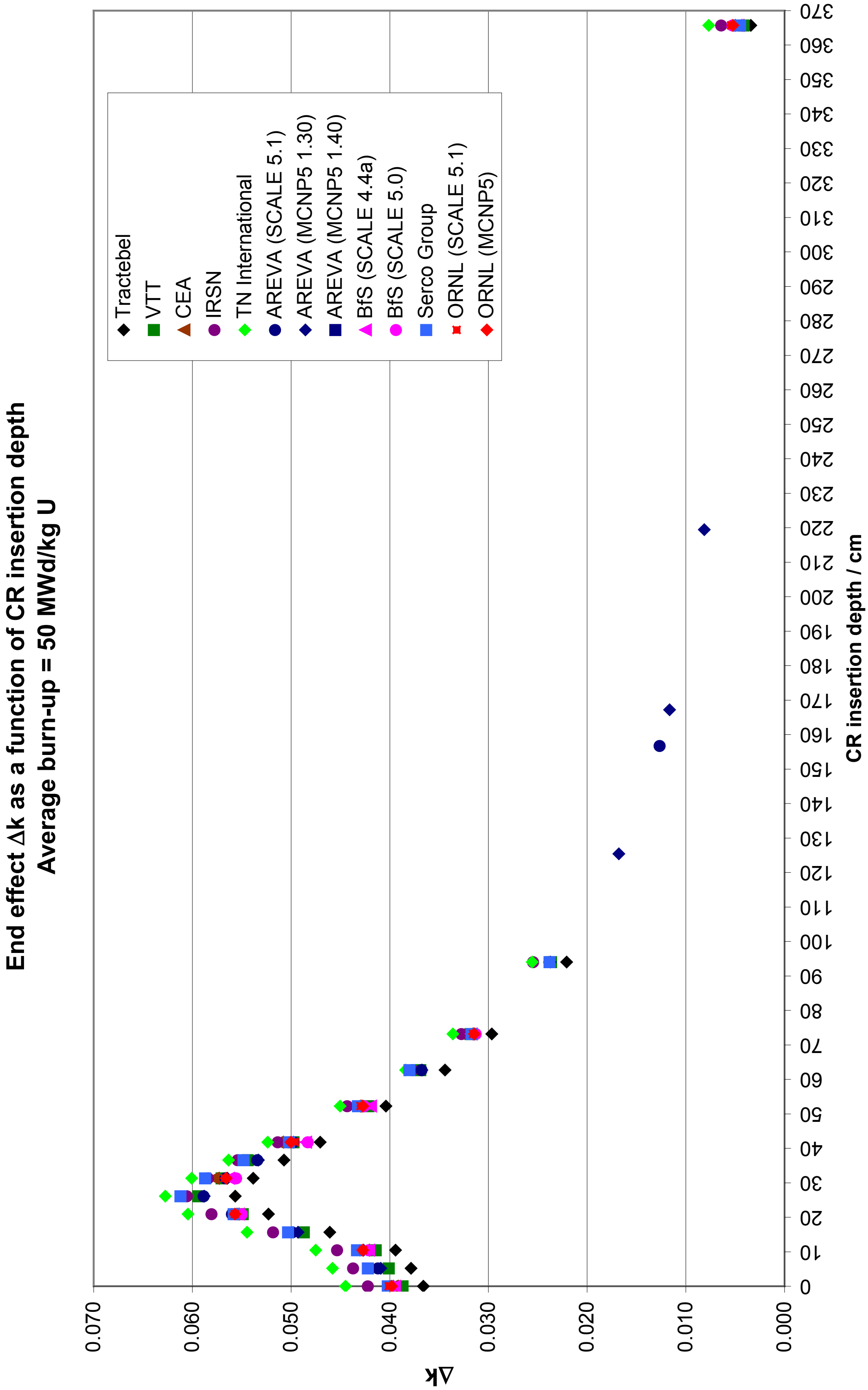


Figure 9.11: 30 MWd/kg U axial burn-up profile: Deviation of the contributors' end effect values Δk from the sample mean Δk_{sm} of these values (see Table 9.8)

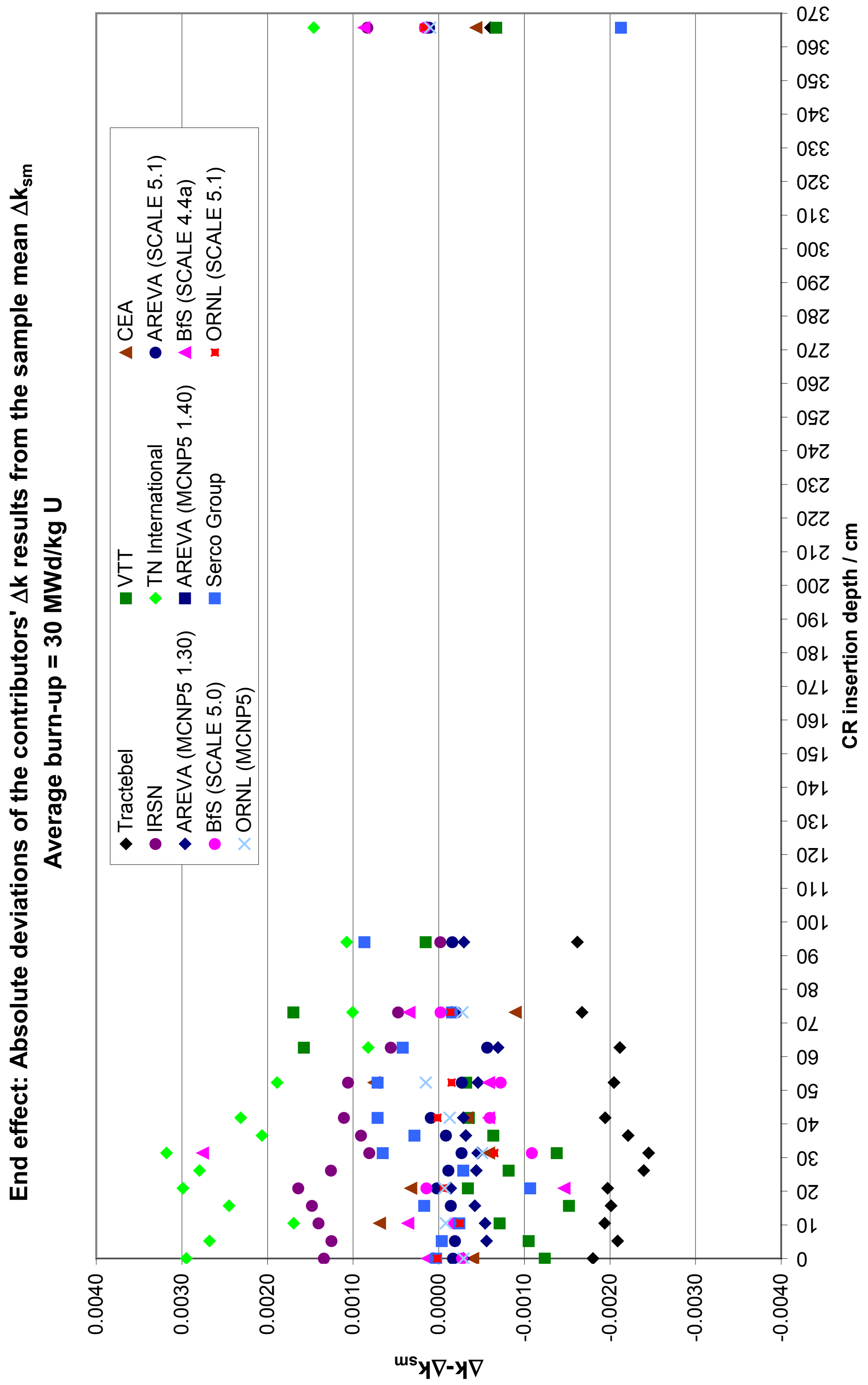


Figure 9.12: 50 MWd/kg U axial burn-up profile: Deviation of the contributors' end effect values Δk from the sample mean Δk_{sm} of these values (see Table 9.11)

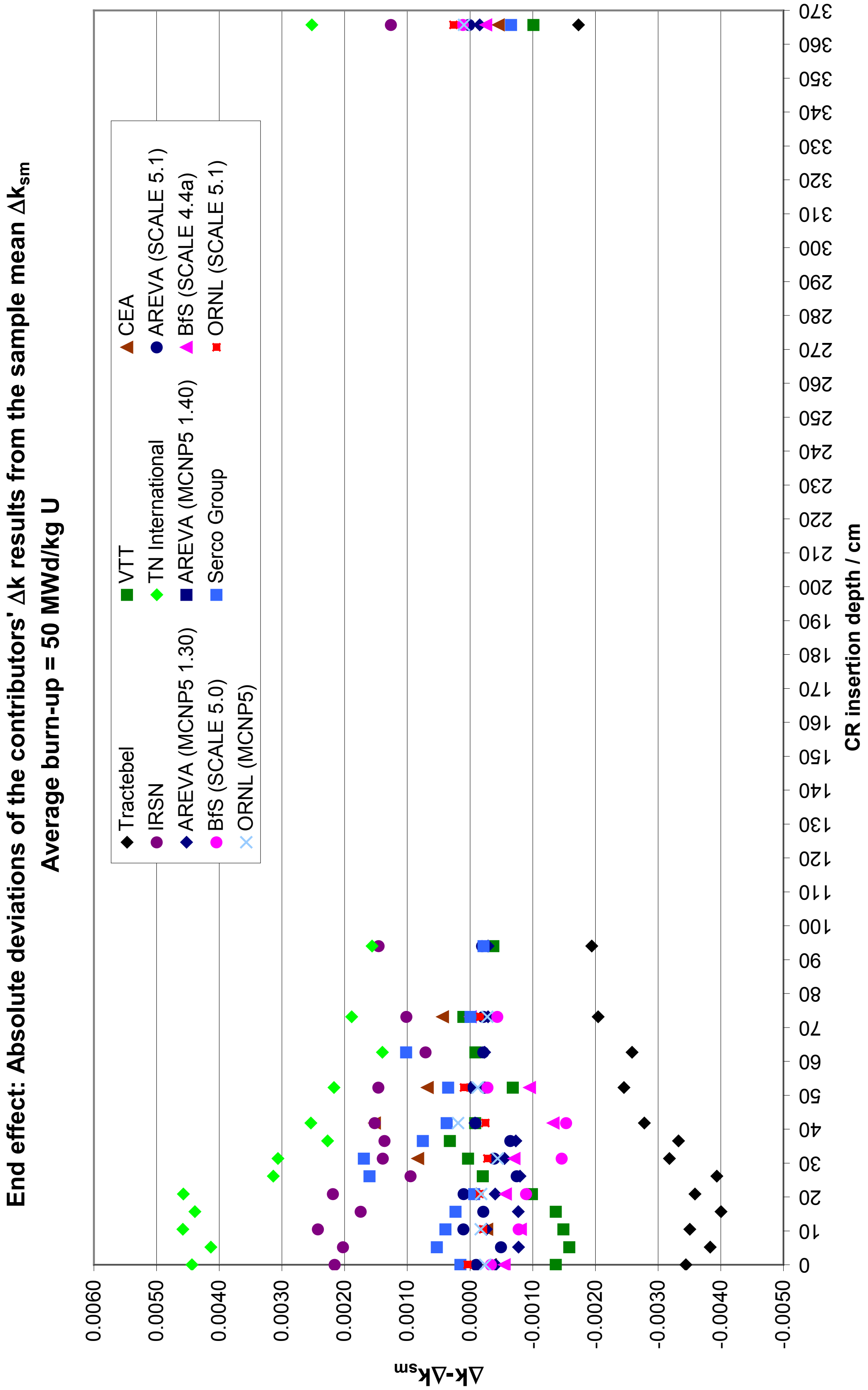


Figure 9.13: Modelling of the end effect as a function of the CR insertion depth d_{CR}

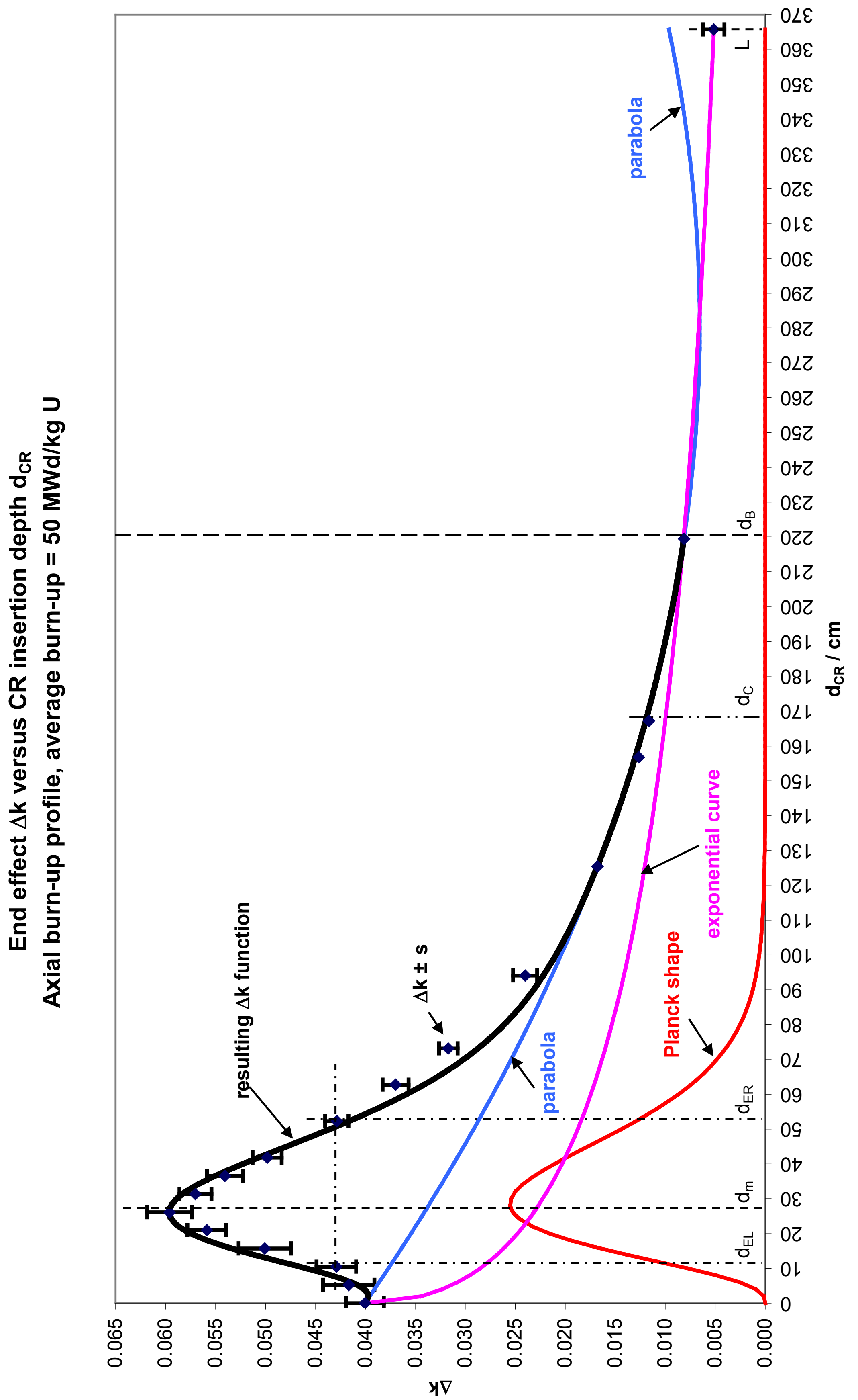


Figure 9.14: End effect model function for the 30 MWd/kg U axial burn-up profile

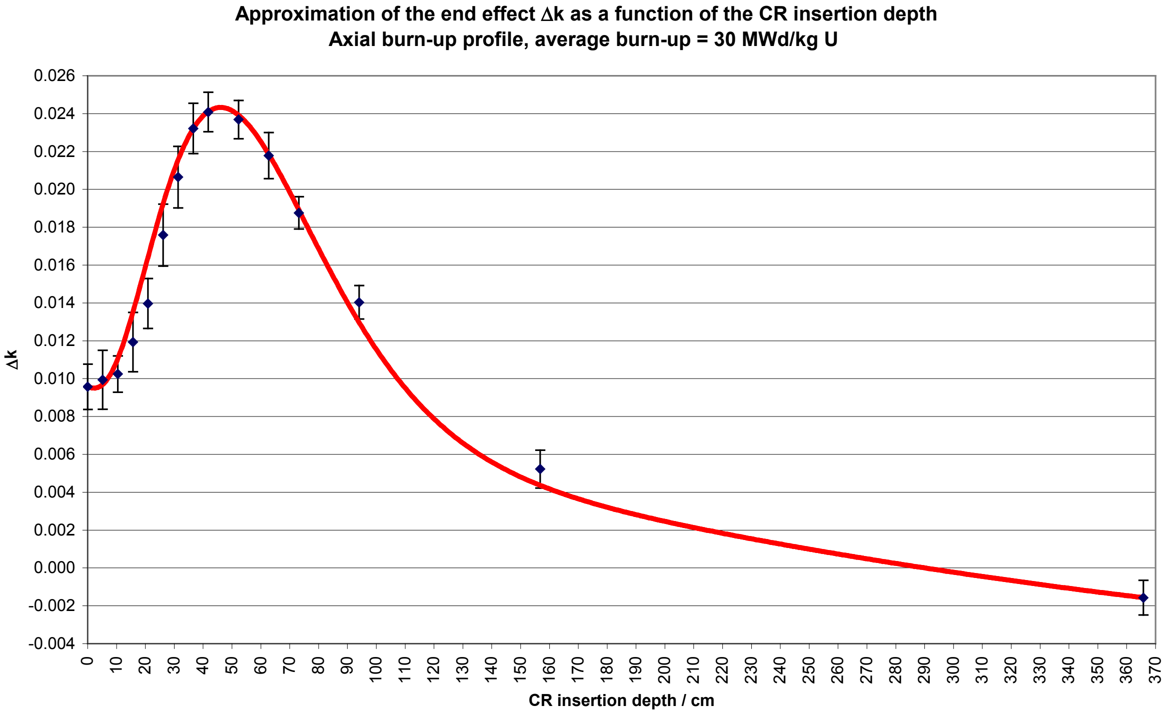


Figure 9.15: End effect model function for the 50 MWd/kg U axial burn-up profile

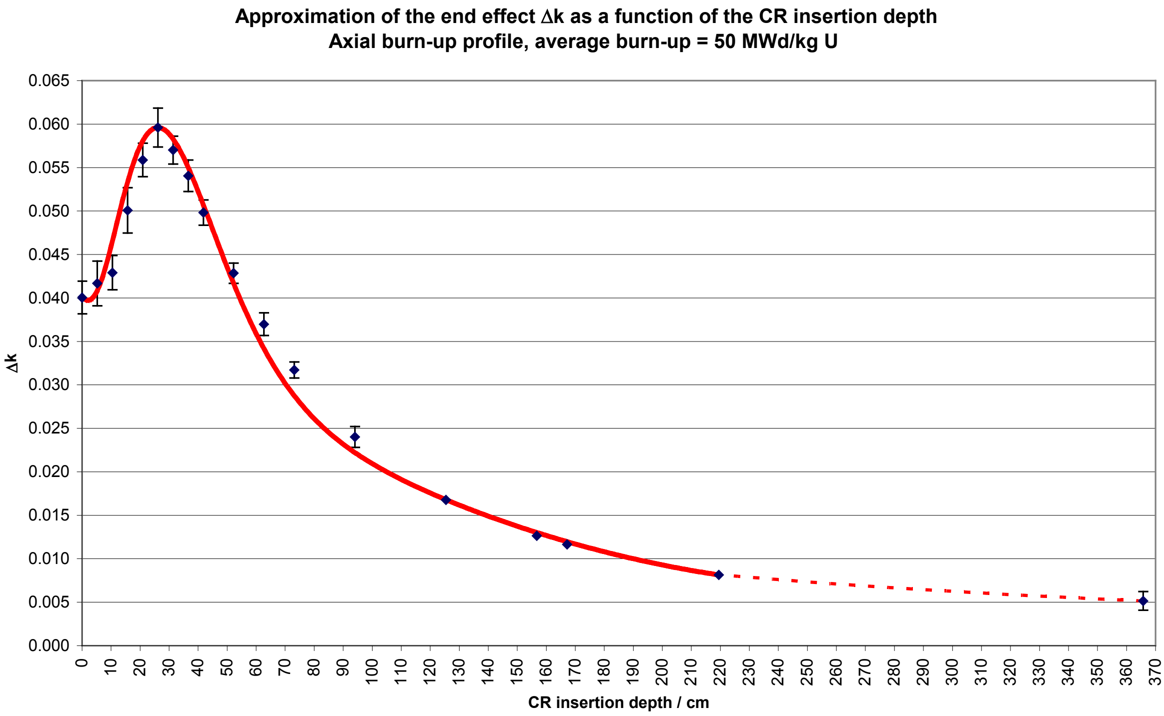


Figure 9.16: Comparison of the end effect model functions for the Phase II-E axial burn-up profiles of 30 MWd/kg U and 50 MWd/kg U average burn-up

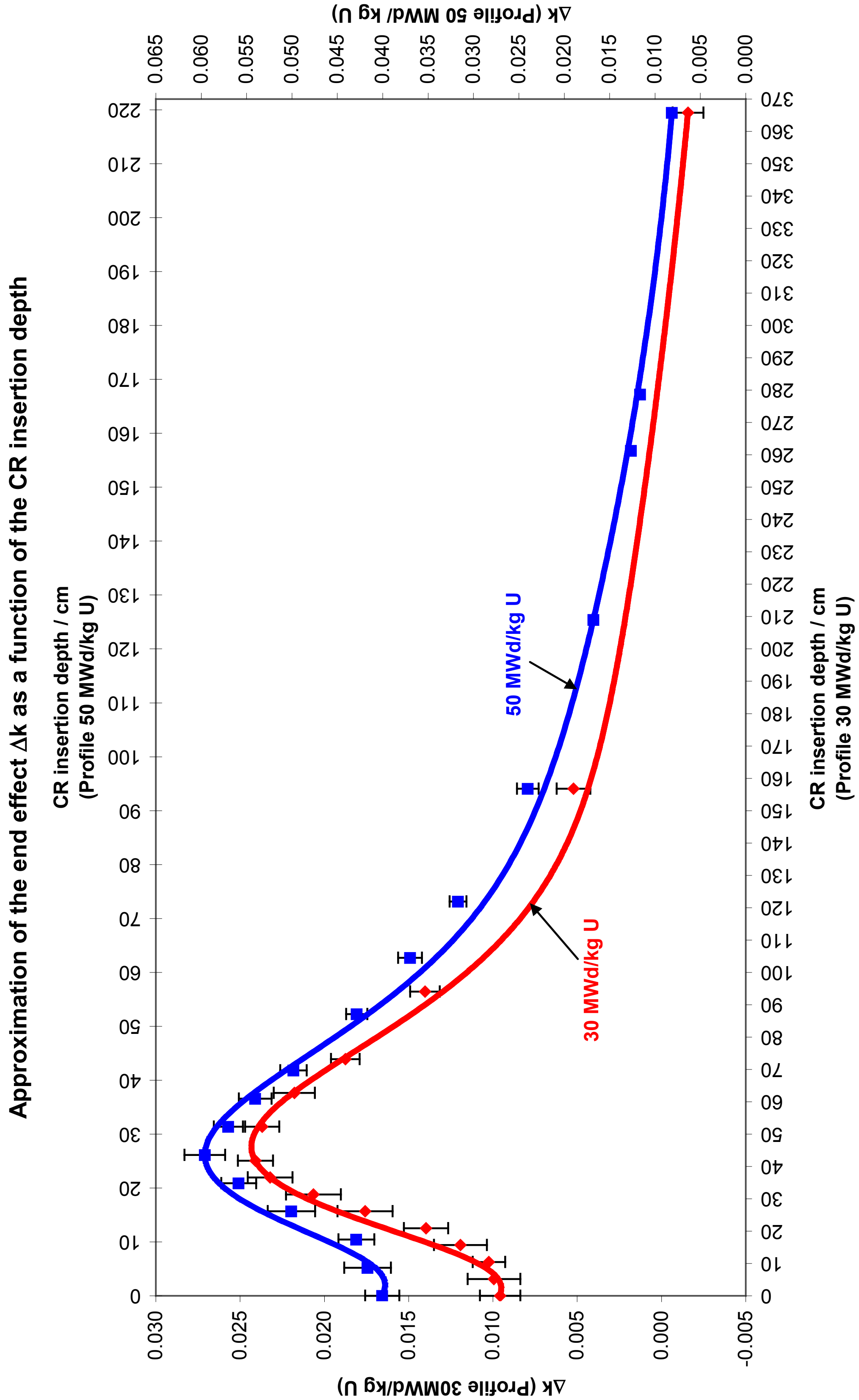


Figure 9.17: End effect as a function of the CR insertion depth d_{CR}: Estimation of the loci of the maximum end effects

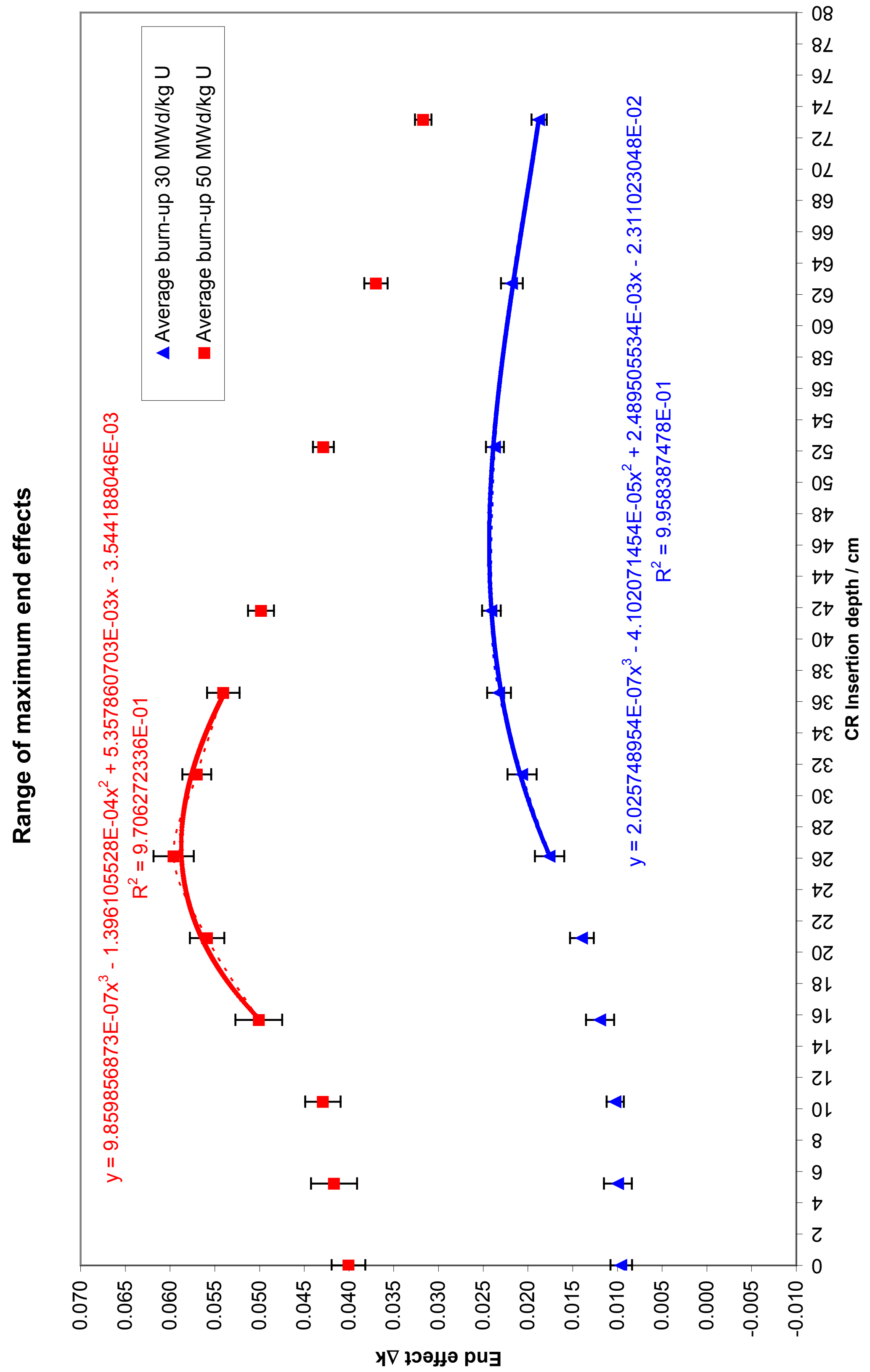


Figure 9.18: Increase δ of the neutron multiplication factor with increasing CR insertion depth and ratio δ(50 MWd/kg U)/δ(30 MWd/kg U) of the increase δ(50 MWd/kg U) observed for the 50 MWd/kg U axial burn-up profile to the increase δ(30 MWd/kg U) obtained with the 30 MWd/kg U) axial burn-up profile (see Table 9.31)

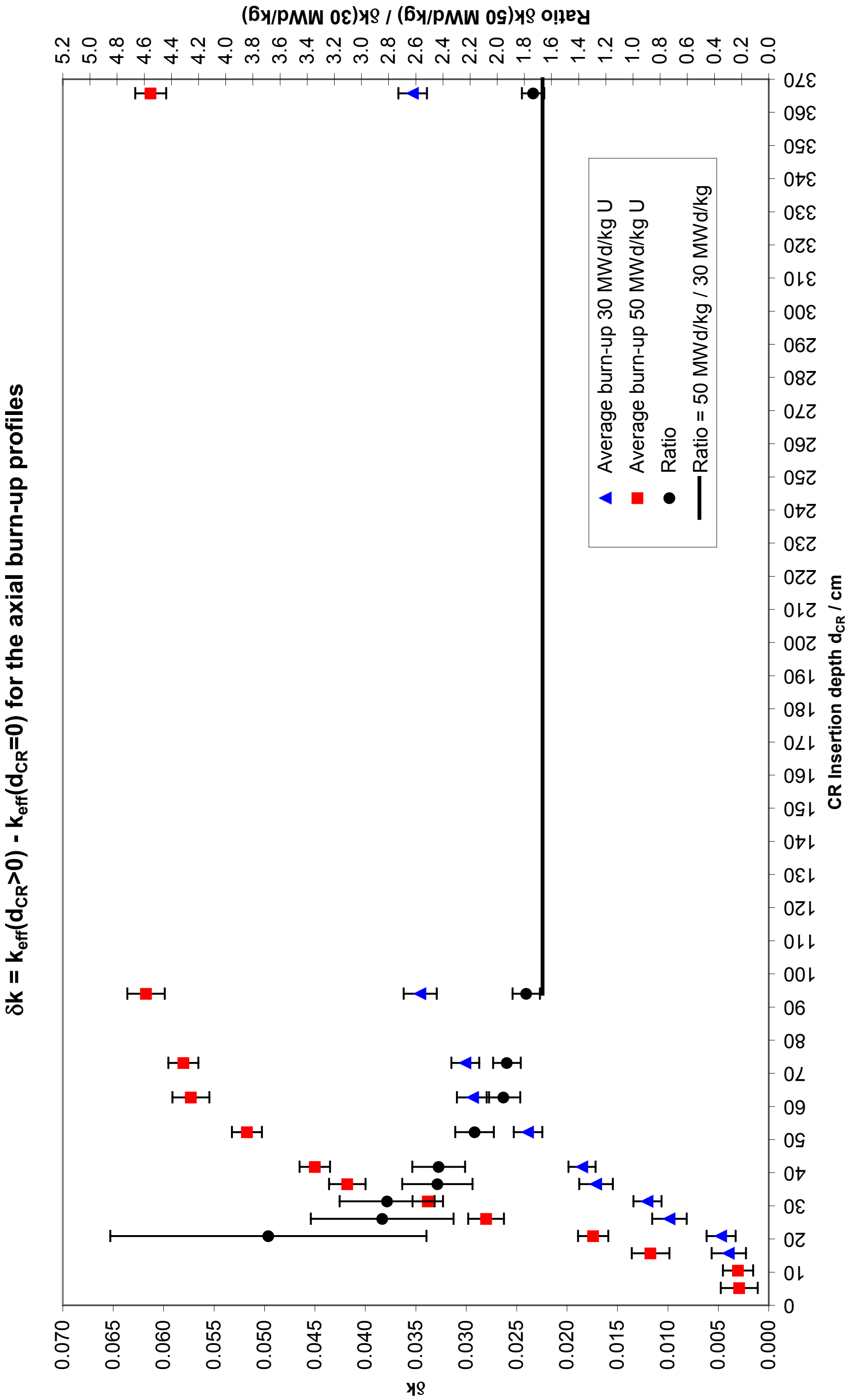


Figure 9.19: 30 MWd/kg U uniform burn-up distribution: Fission densities (AREVA NP results normalised according to Equation (9.52))

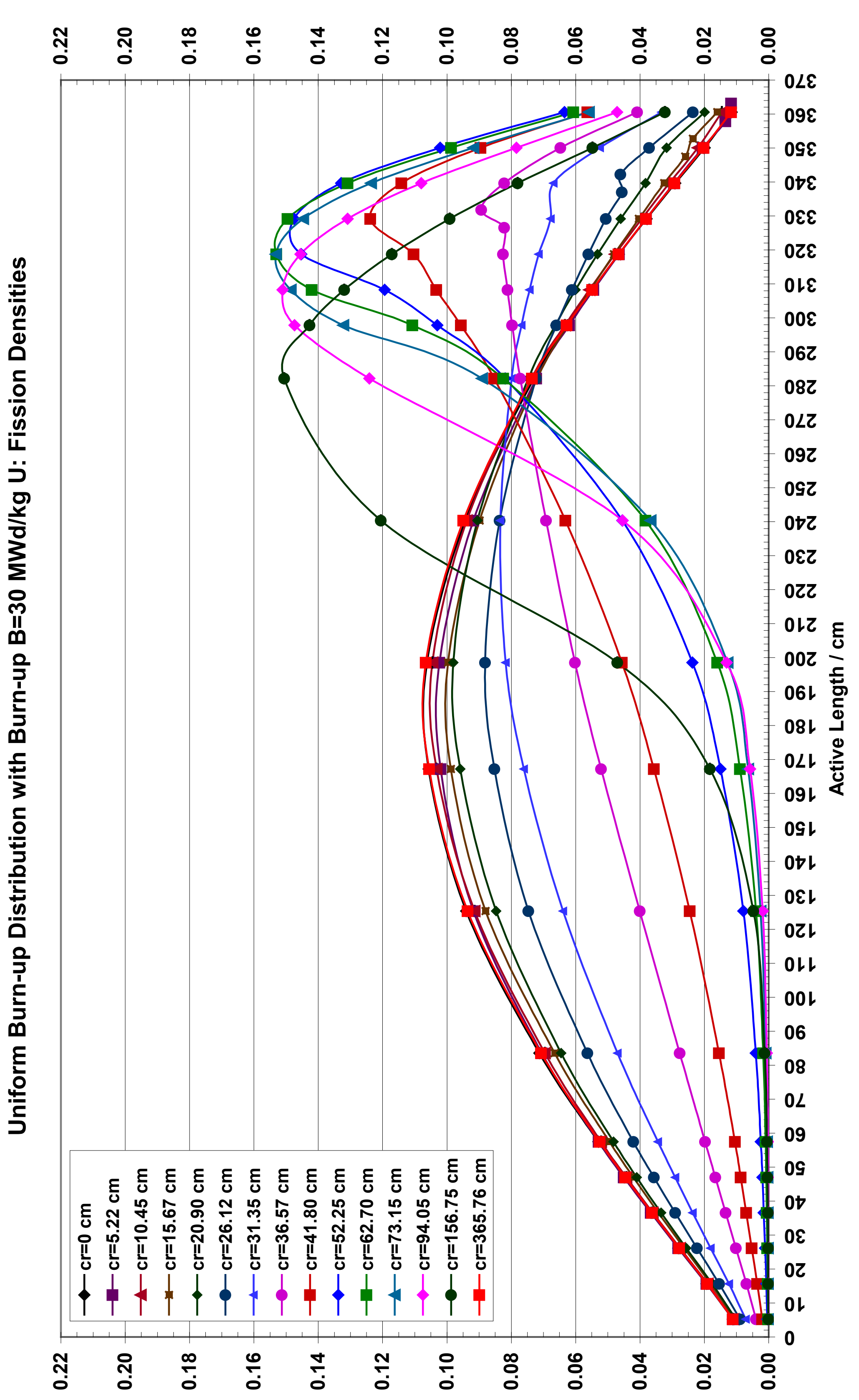


Figure 9.20: 50 MWd/kg U uniform burn-up distribution: Fission densities (AREVA NP results normalised according to Equation (9.52))

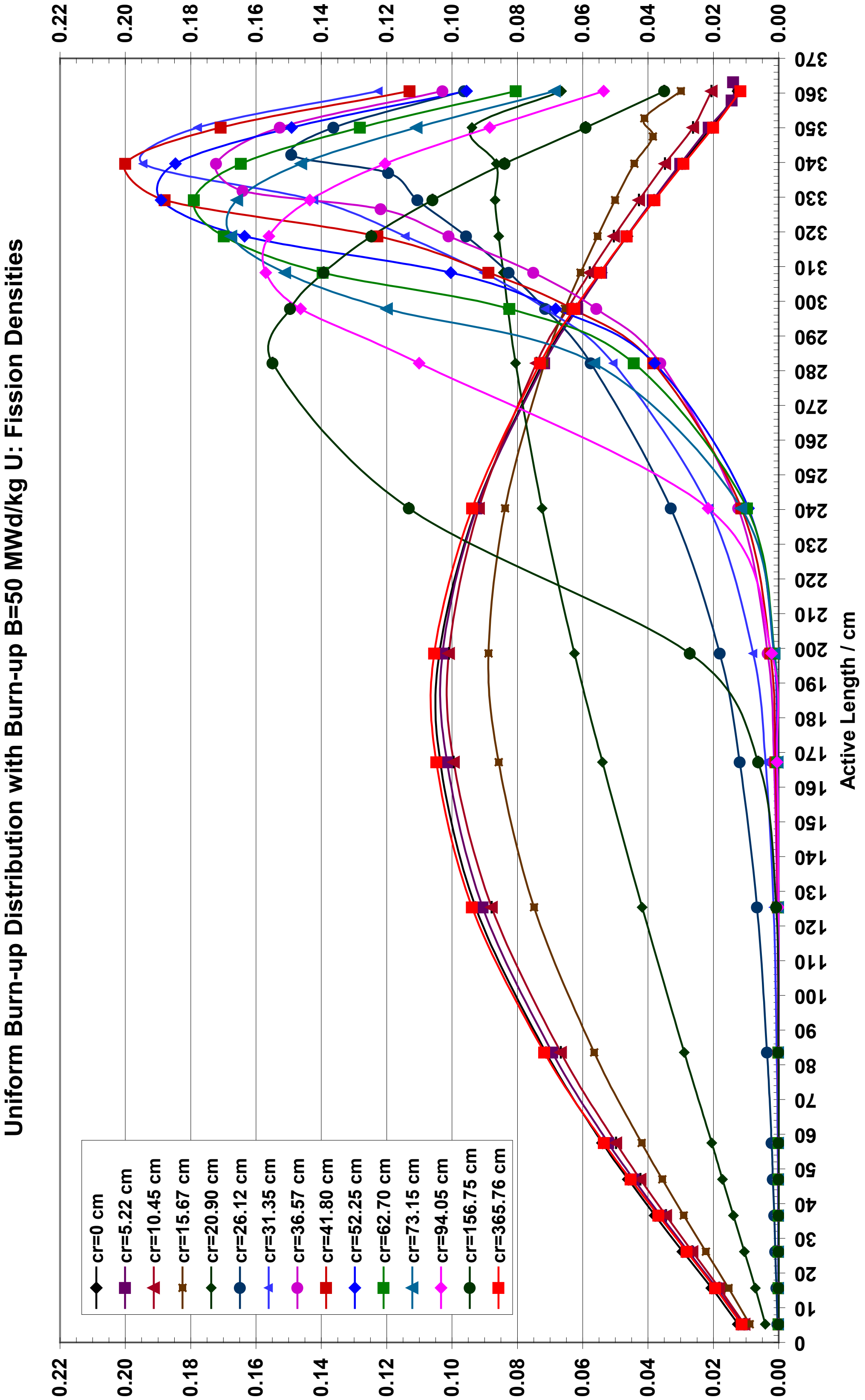


Figure 9.21: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 0 cm (no CR insertion)

Figure 9.21a

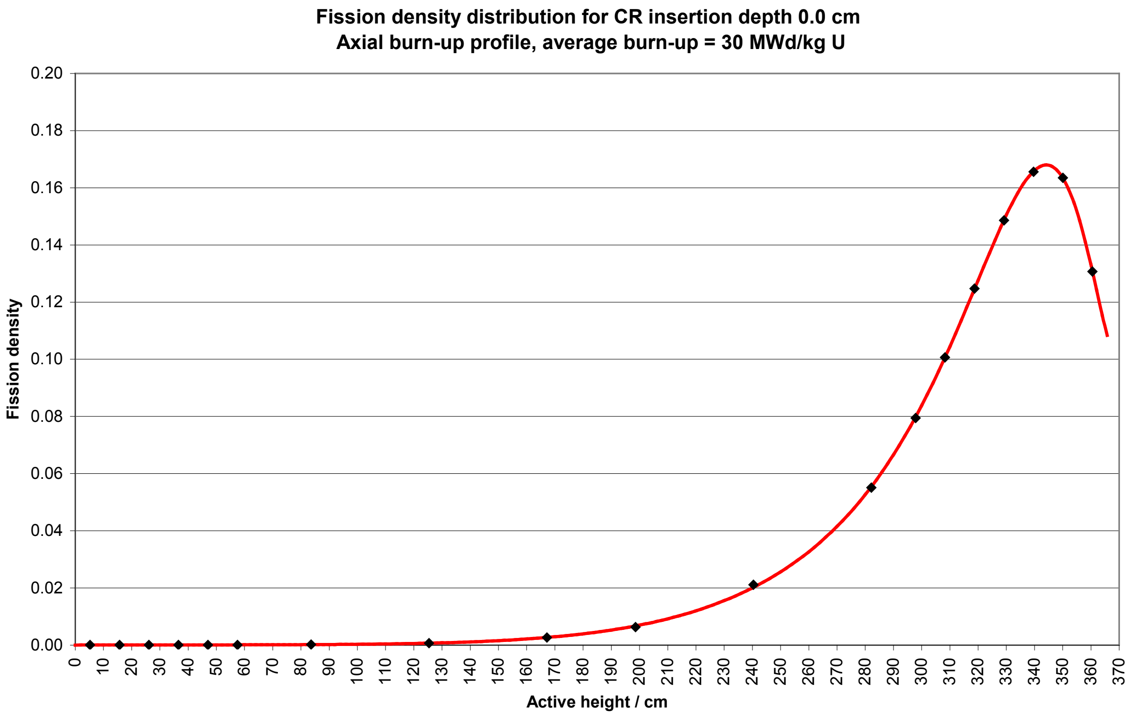


Figure 9.21b

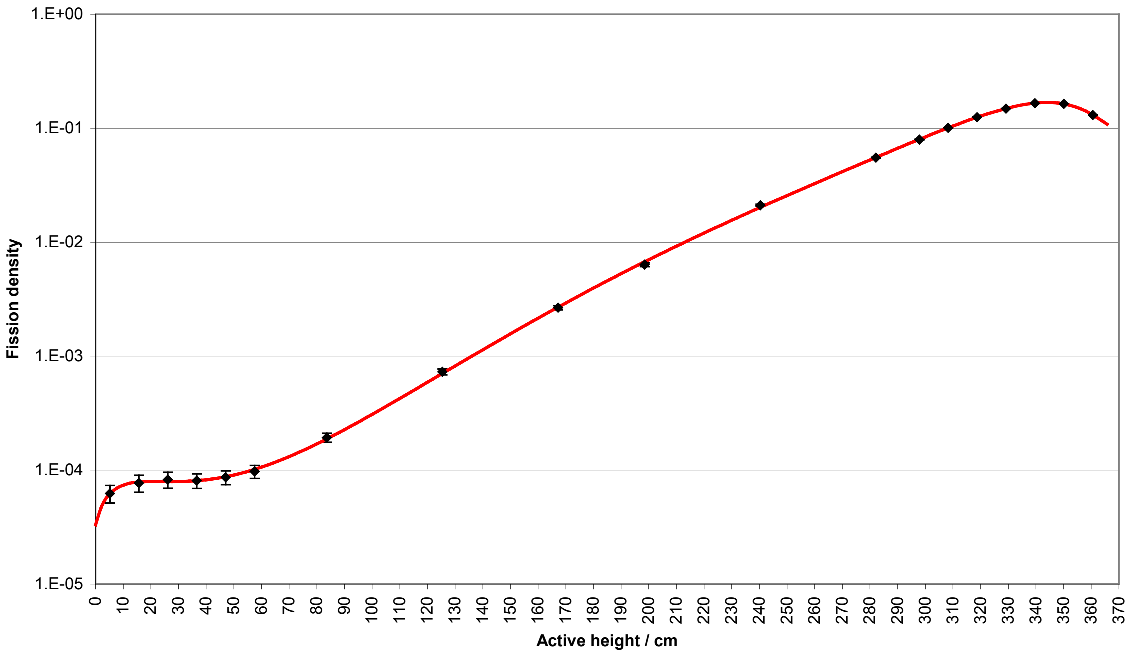


Figure 9.22: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 5.22 cm

Figure 9.22a

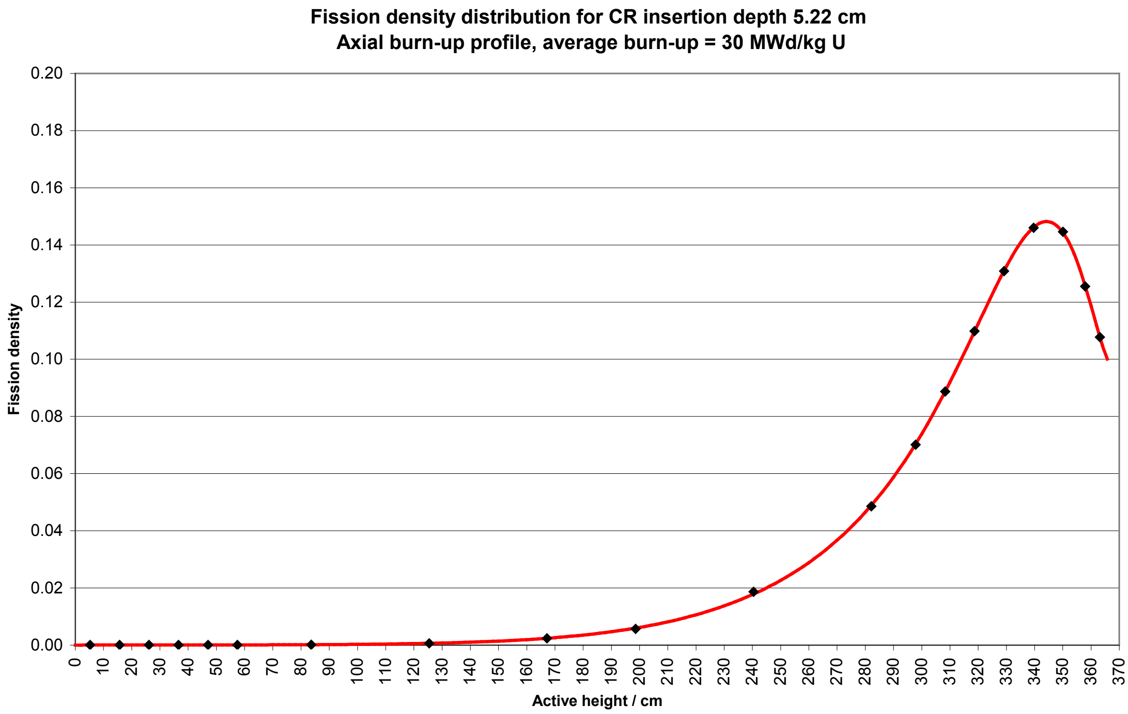


Figure 9.22b

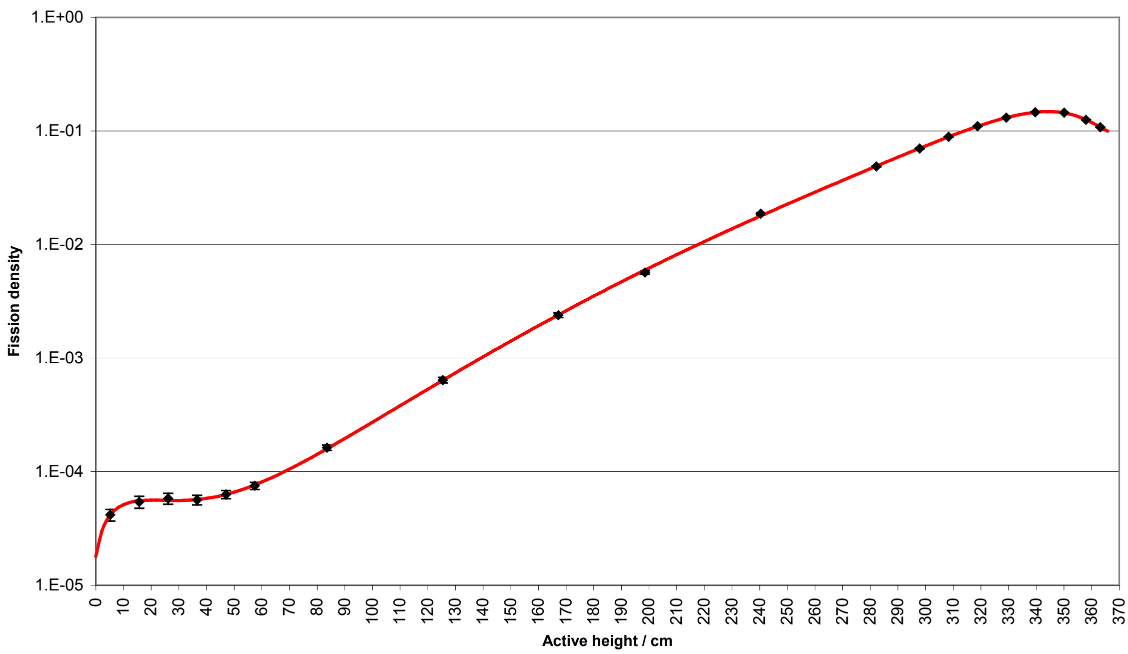


Figure 9.23: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 10.45 cm

Figure 9.23a

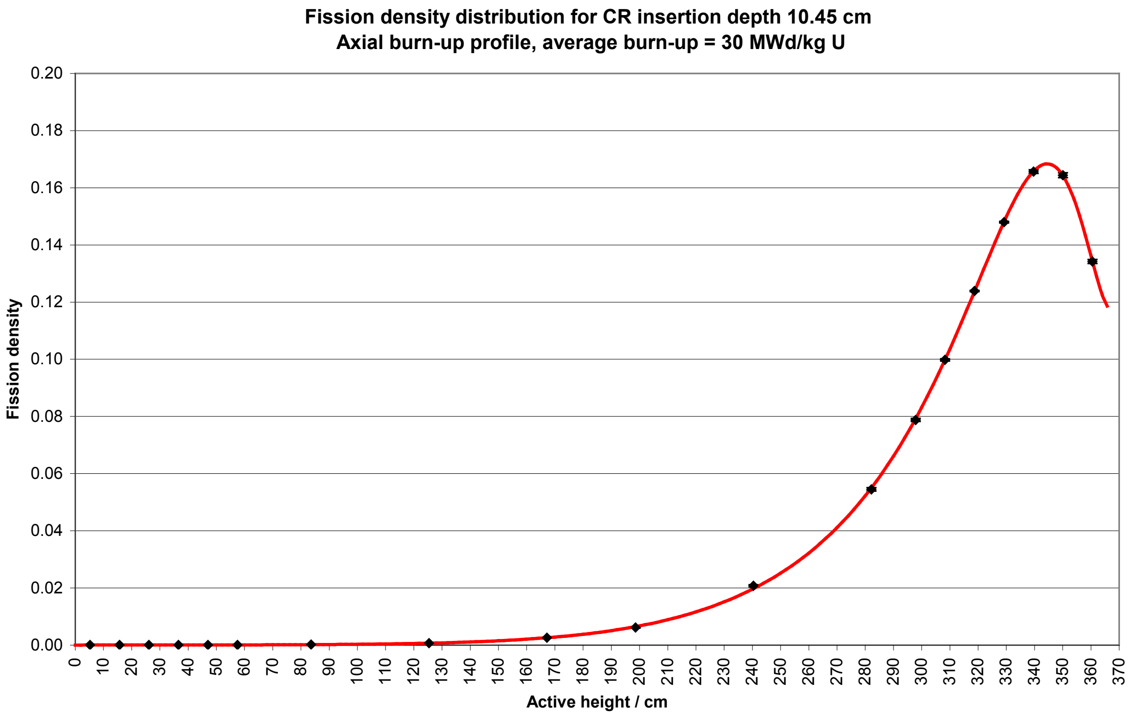


Figure 9.23b

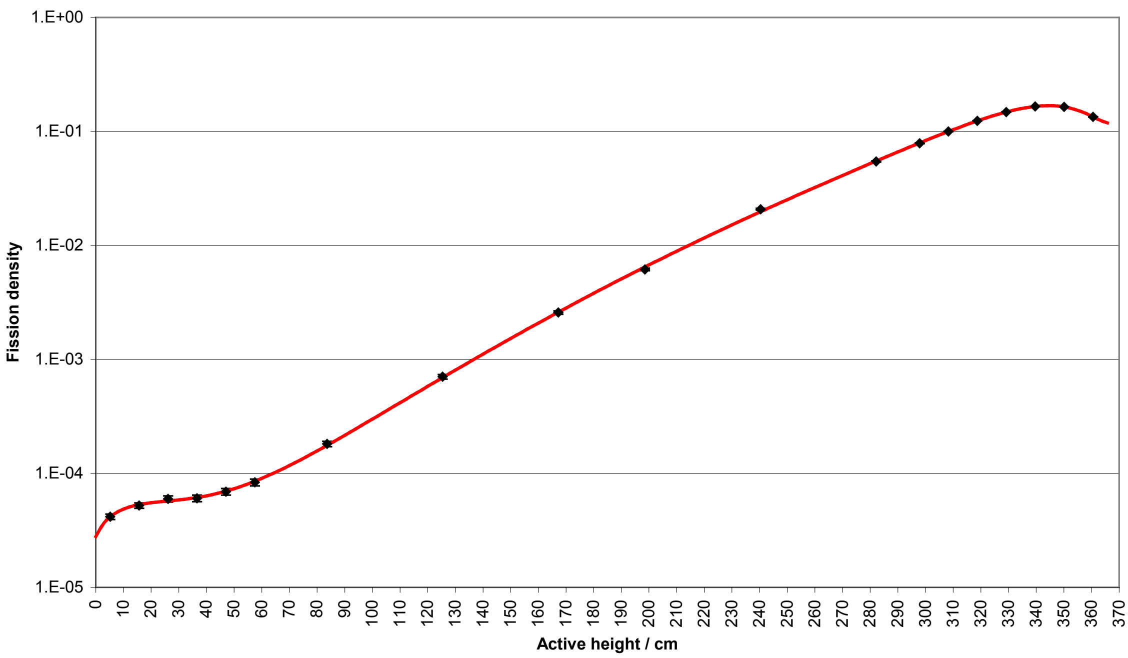


Figure 9.24: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 15.67 cm

Figure 9.24a

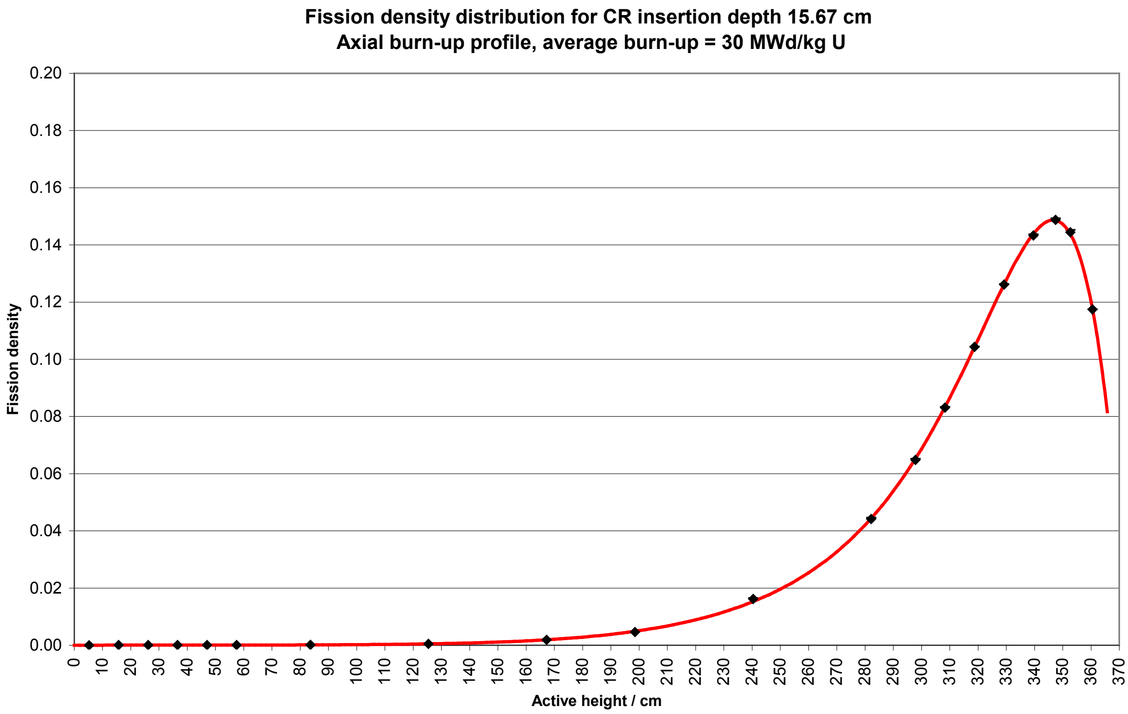


Figure 9.24b

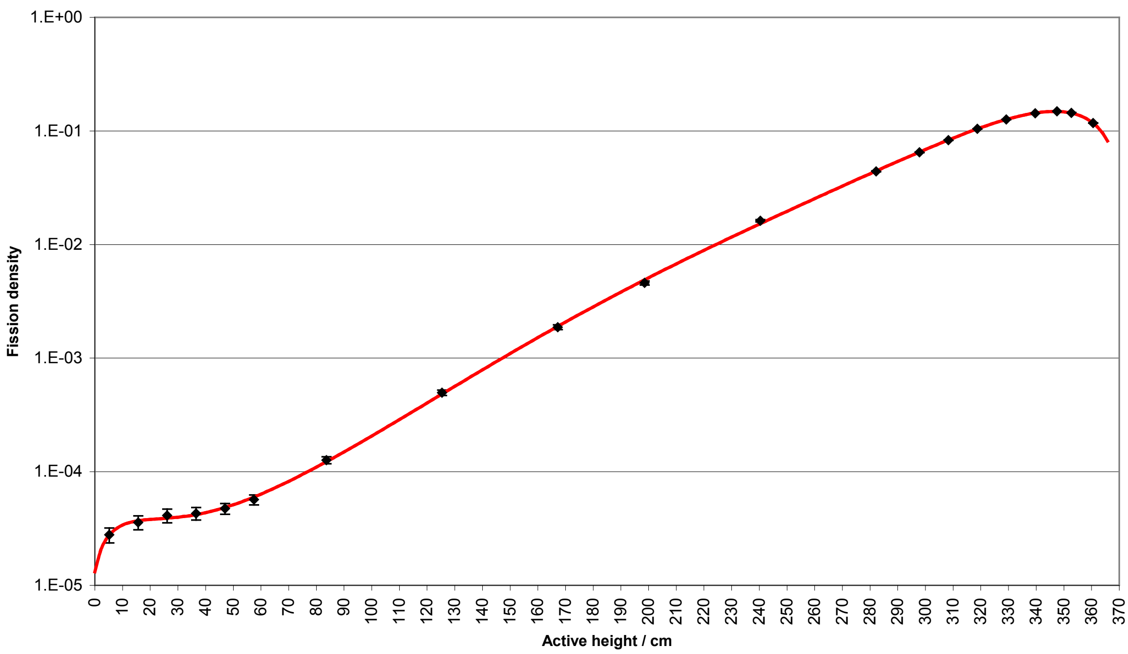


Figure 9.25: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 20.90 cm

Figure 9.25a

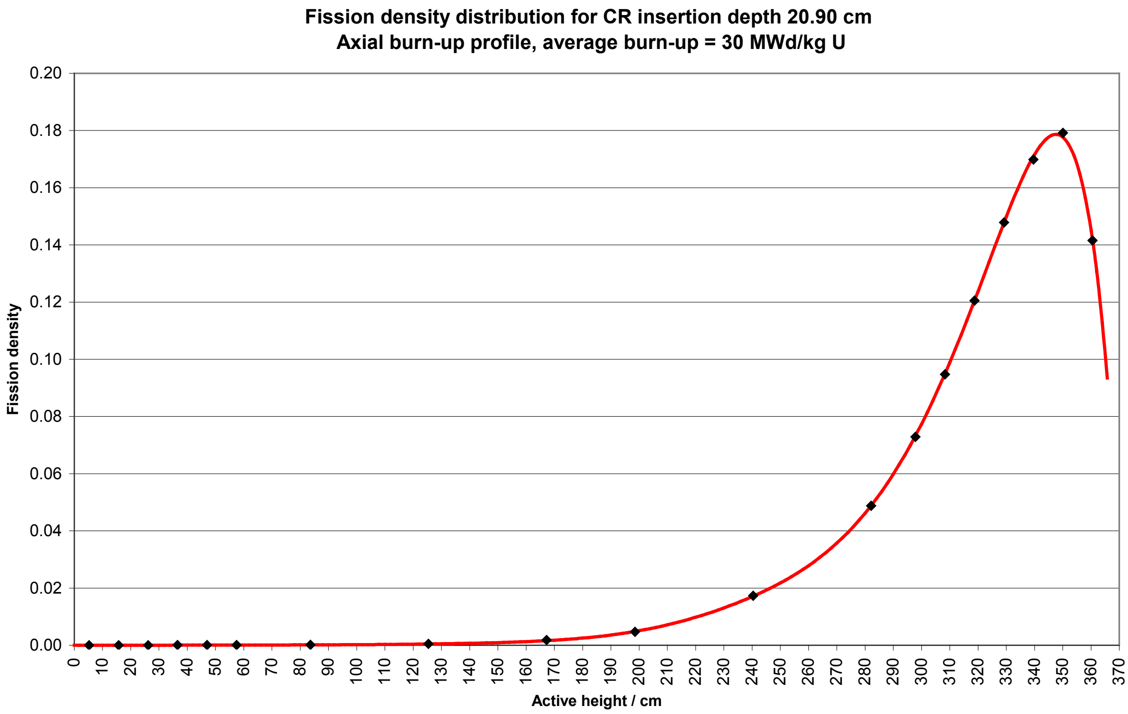


Figure 9.25b

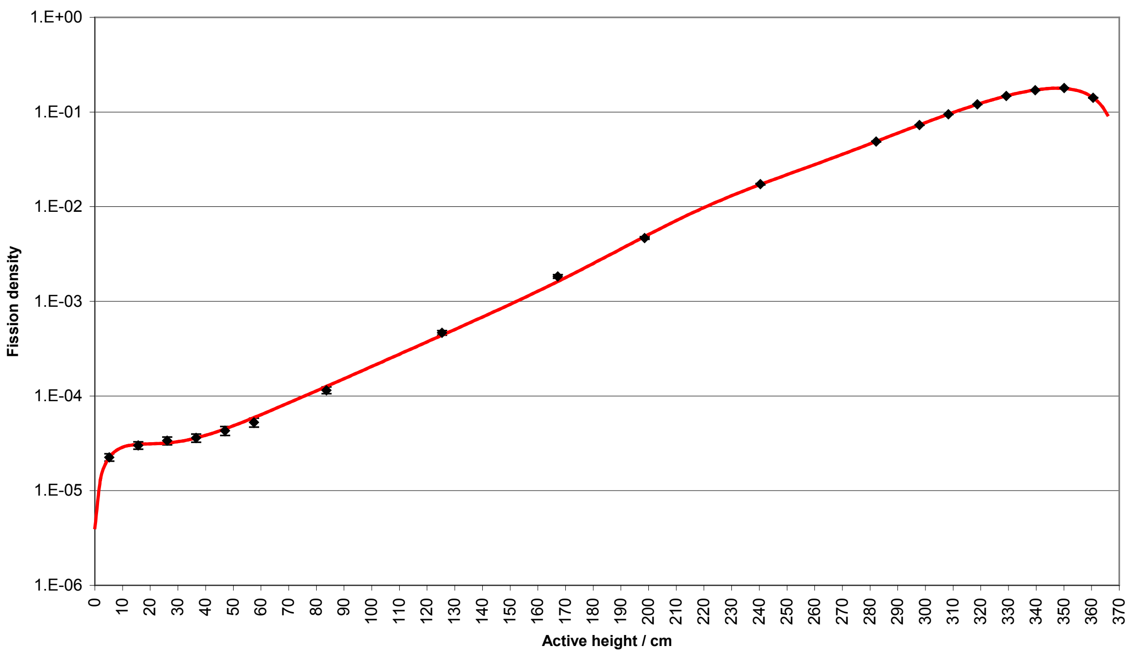


Figure 9.26: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 26.12 cm

Figure 9.26a

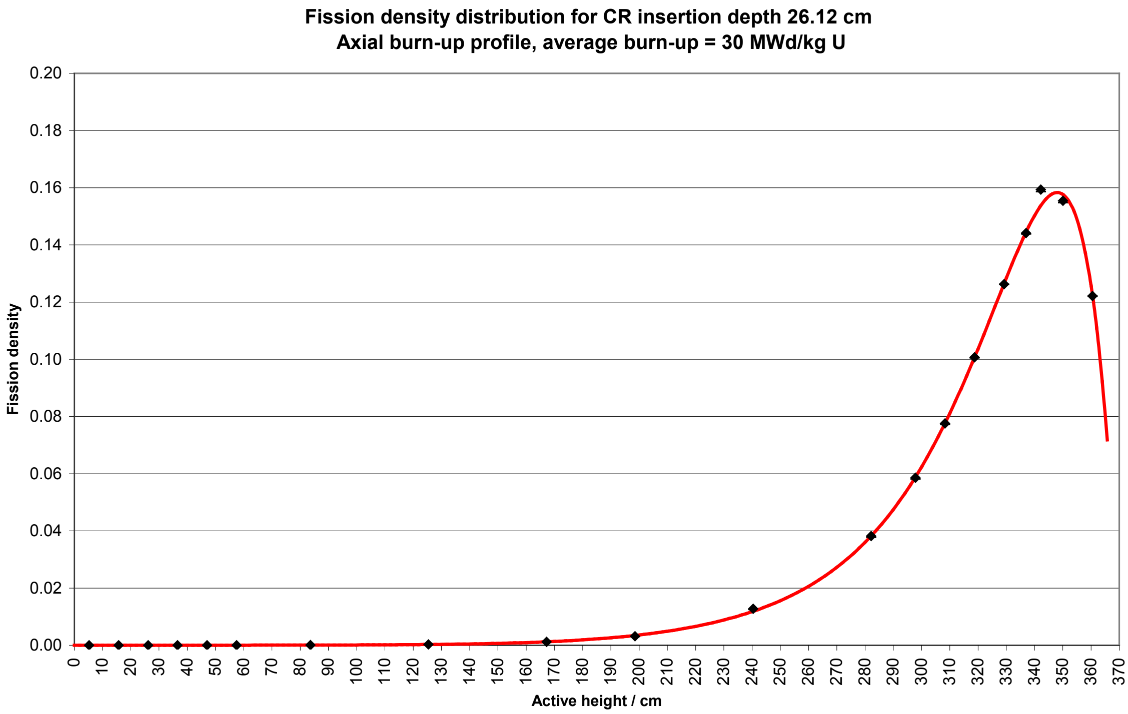


Figure 9.26b

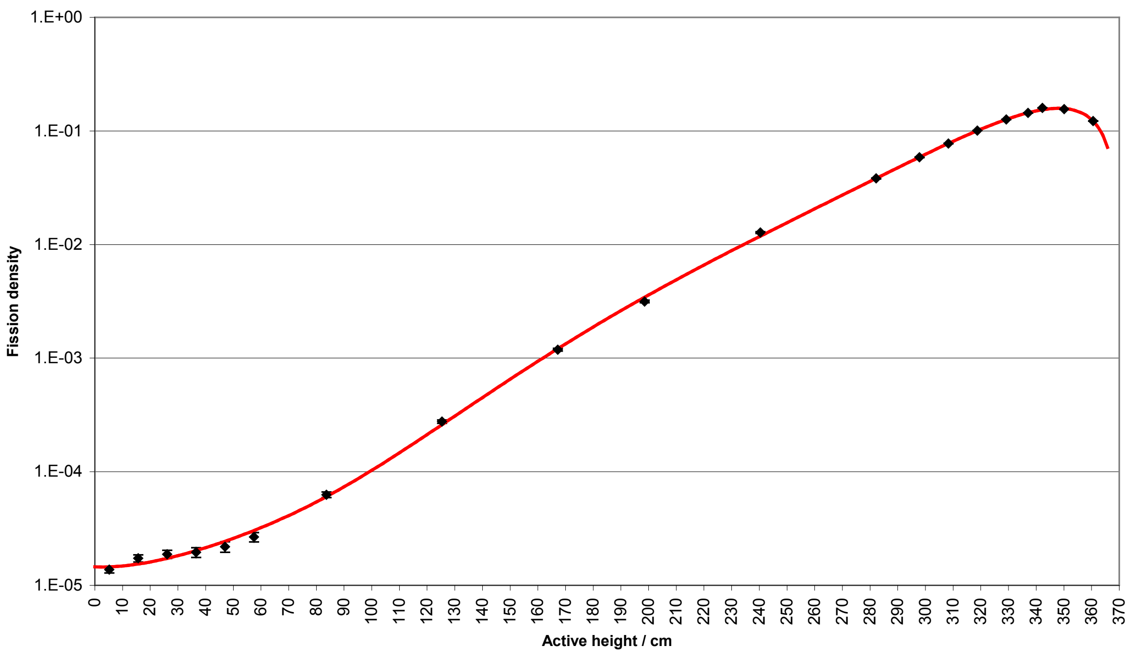


Figure 9.27: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 31.35 cm

Figure 9.27a

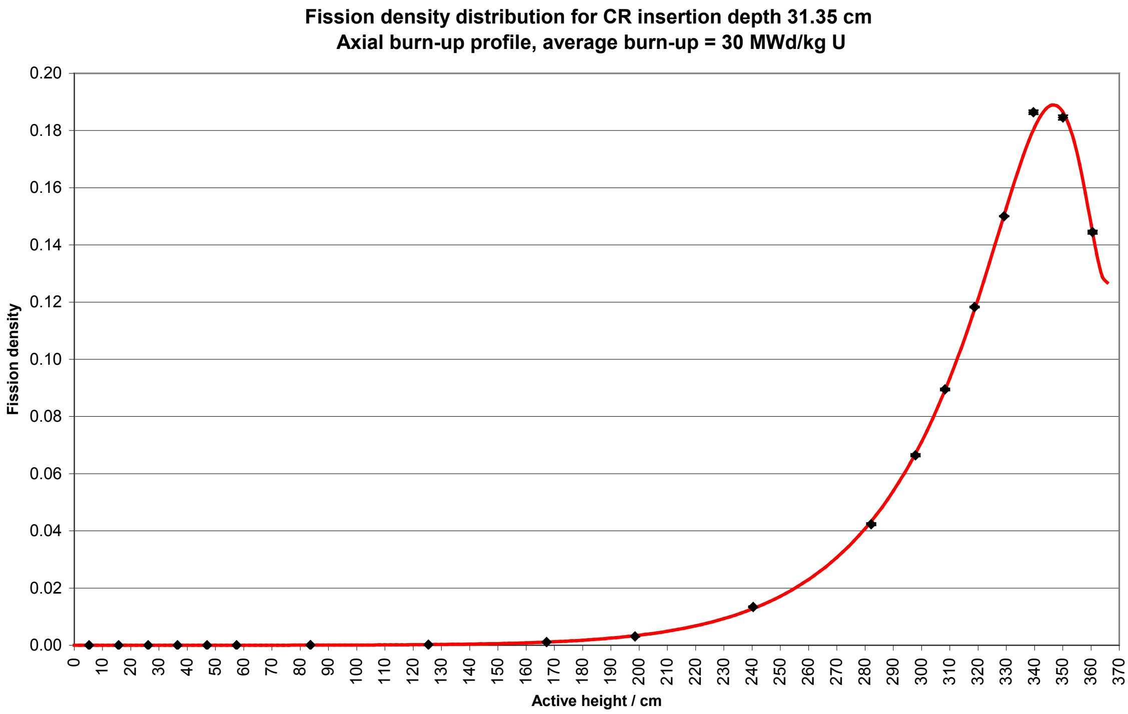


Figure 9.27b

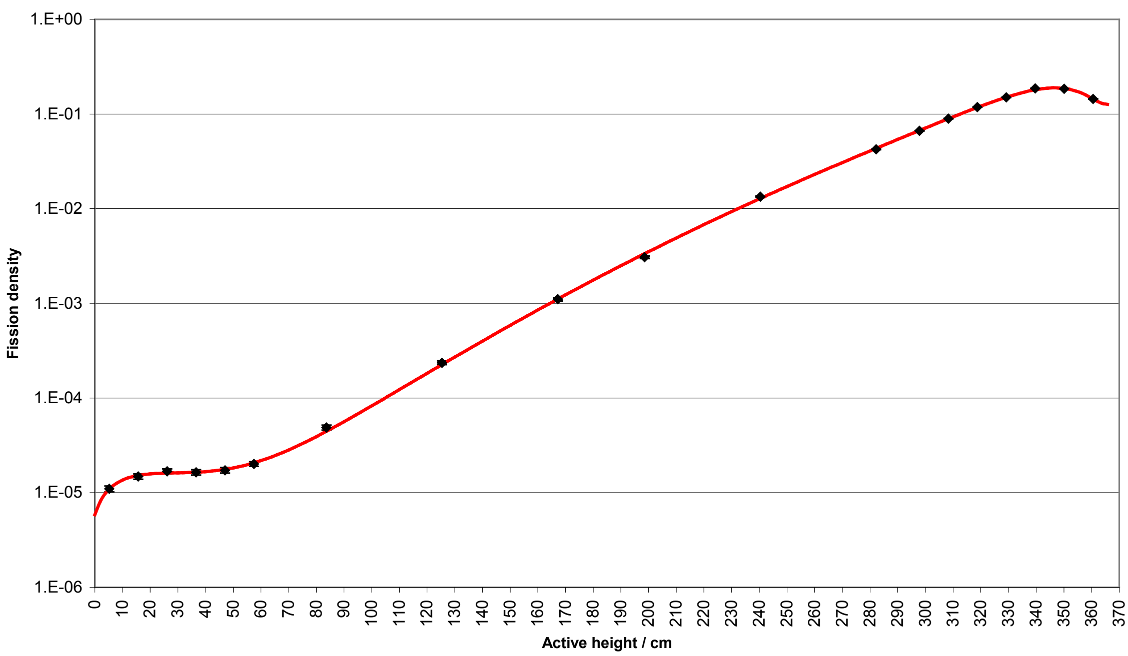


Figure 9.28: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 36.57 cm

Figure 9.28a

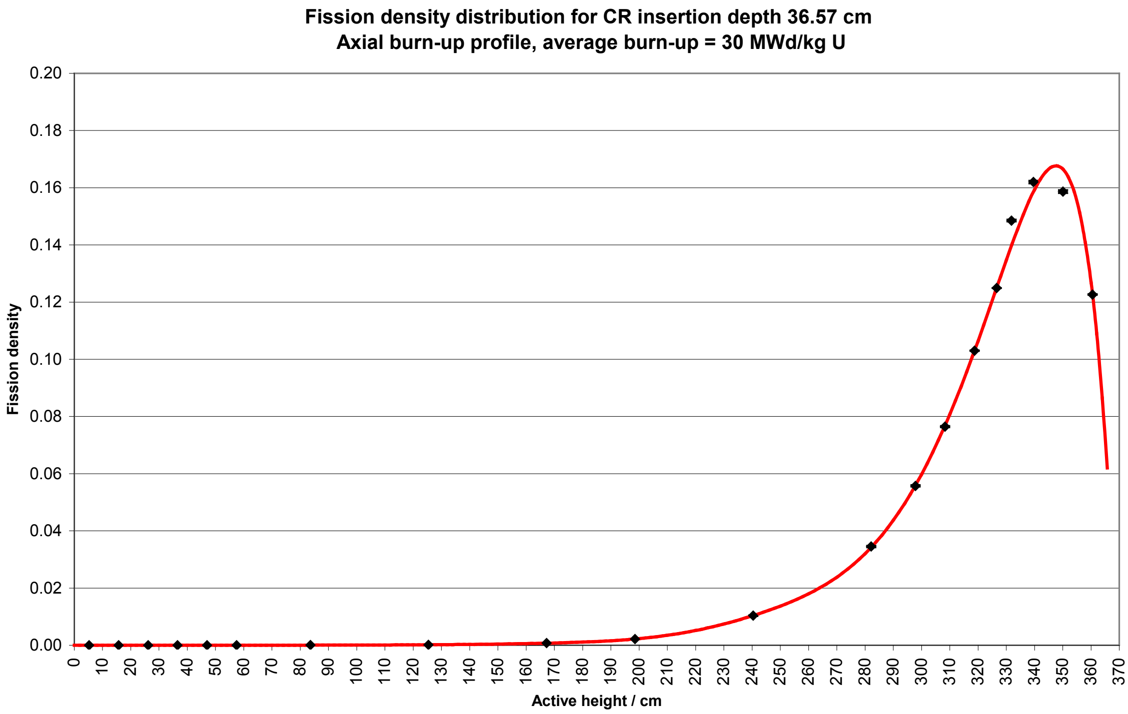


Figure 9.28b

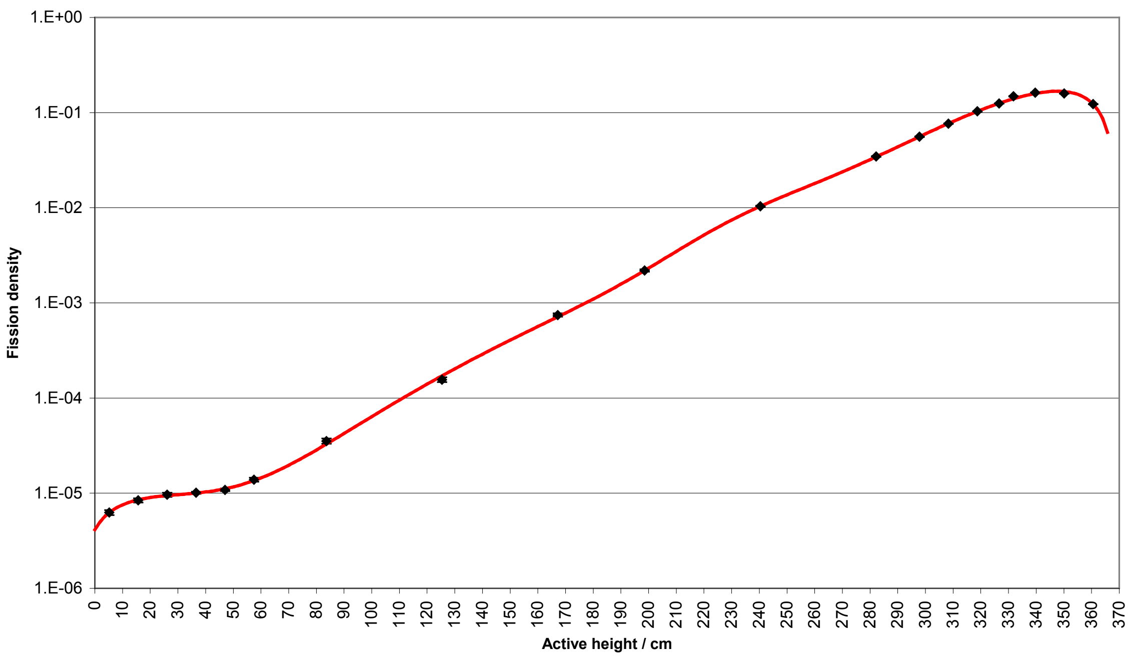


Figure 9.29: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 41.80 cm

Figure 9.29a

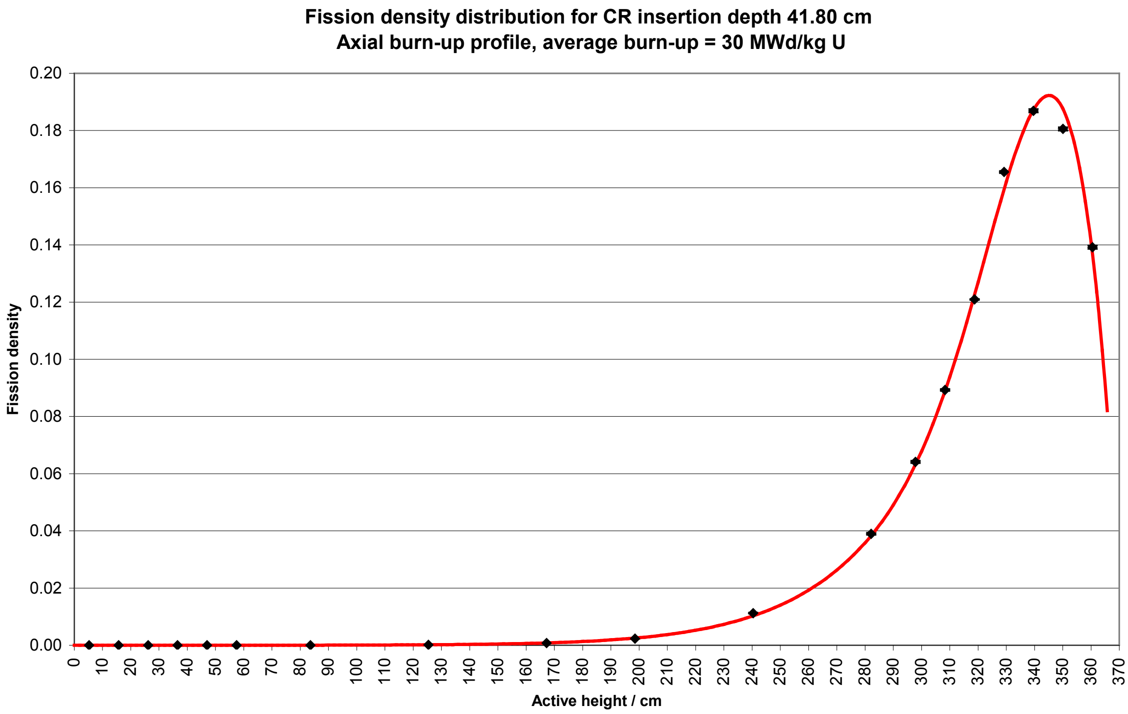


Figure 9.29b

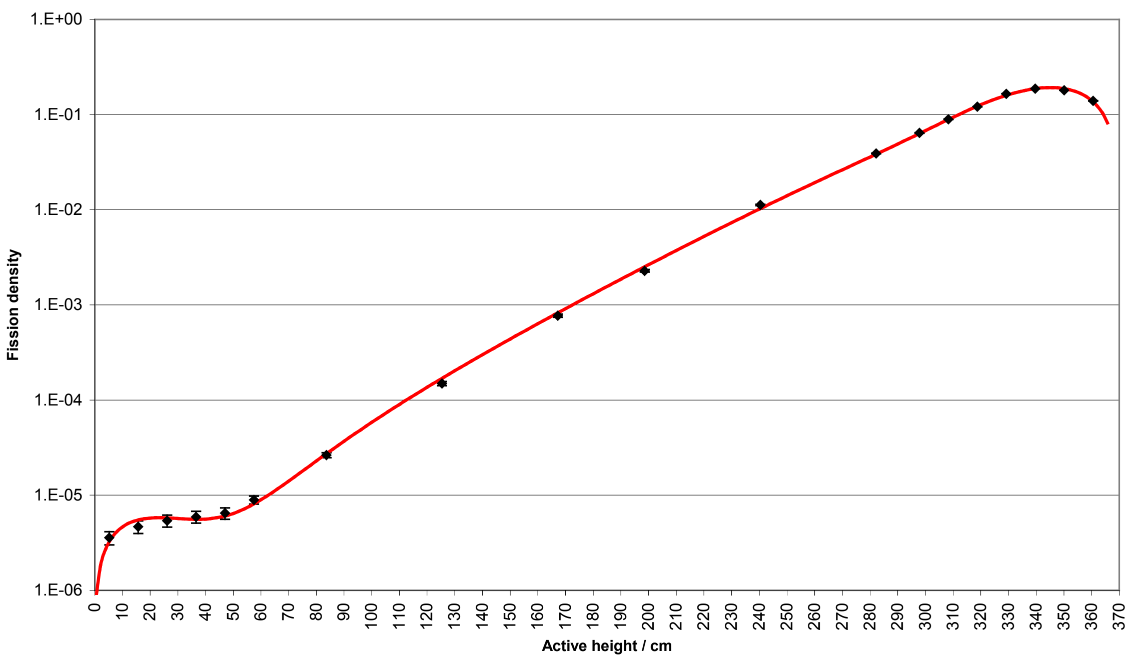


Figure 9.30: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 52.25 cm

Figure 9.30a

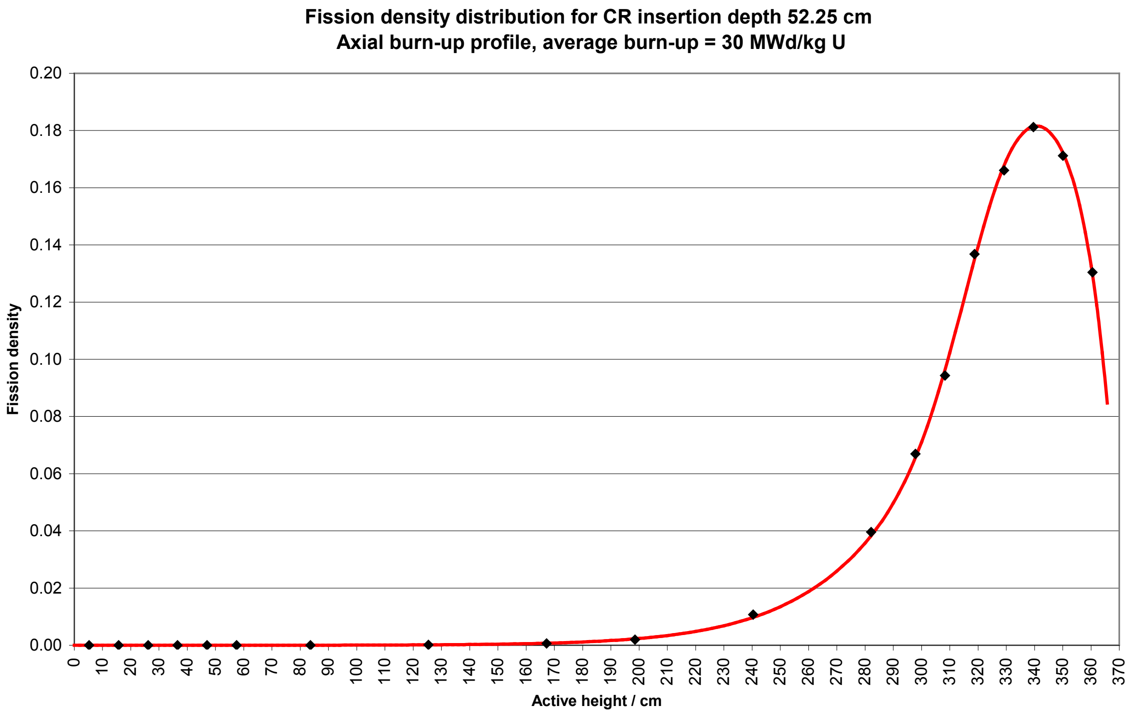


Figure 9.30b

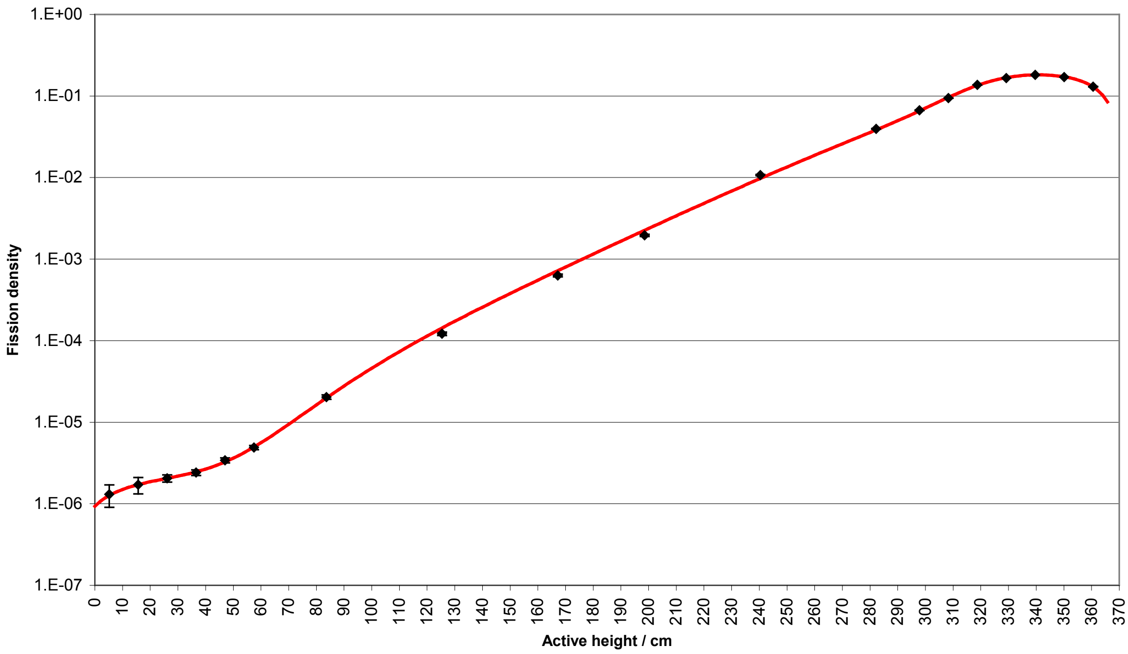


Figure 9.31: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 62.70 cm

Figure 9.31a

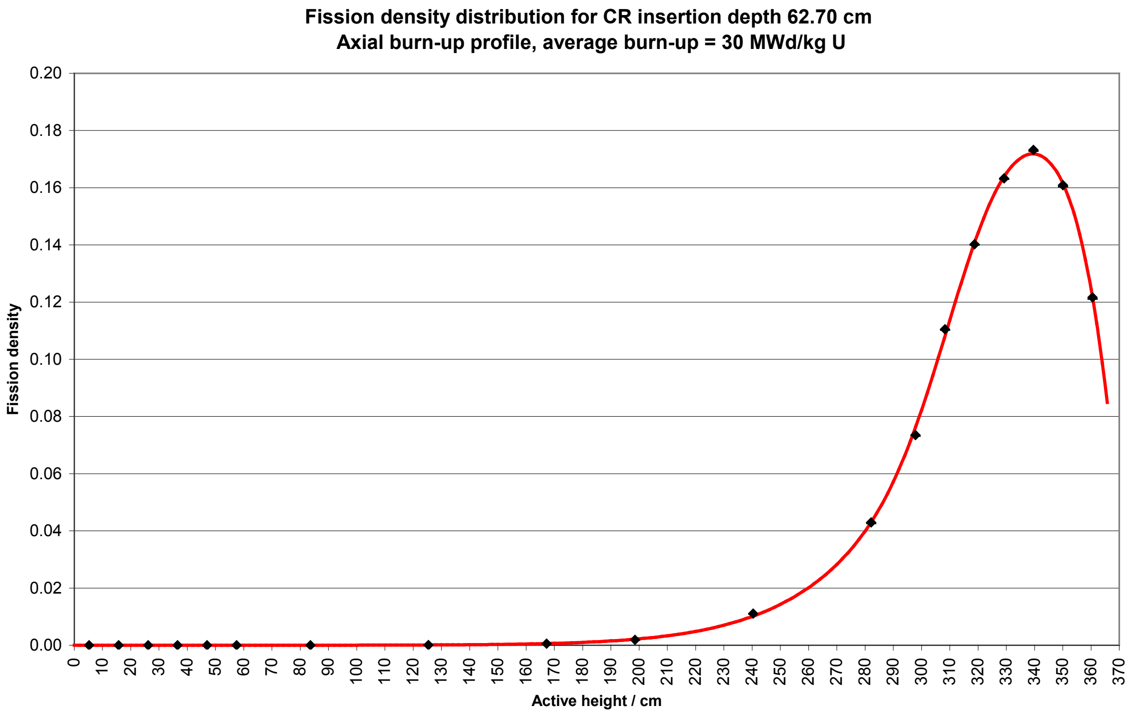


Figure 9.31b

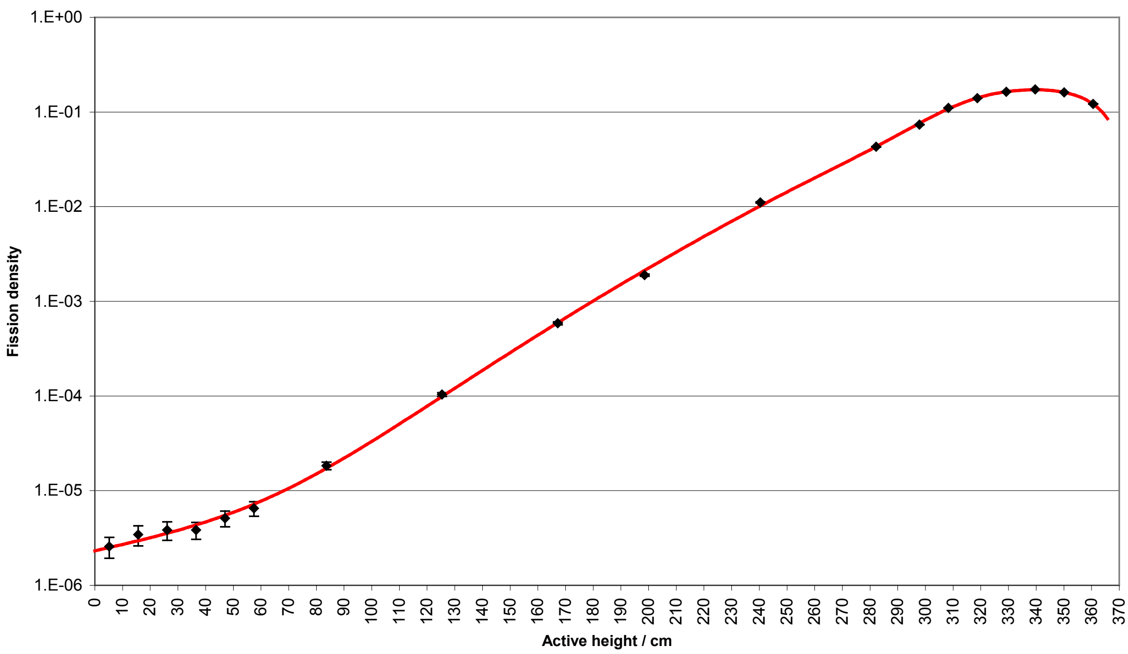


Figure 9.32: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 73.15 cm

Figure 9.32a

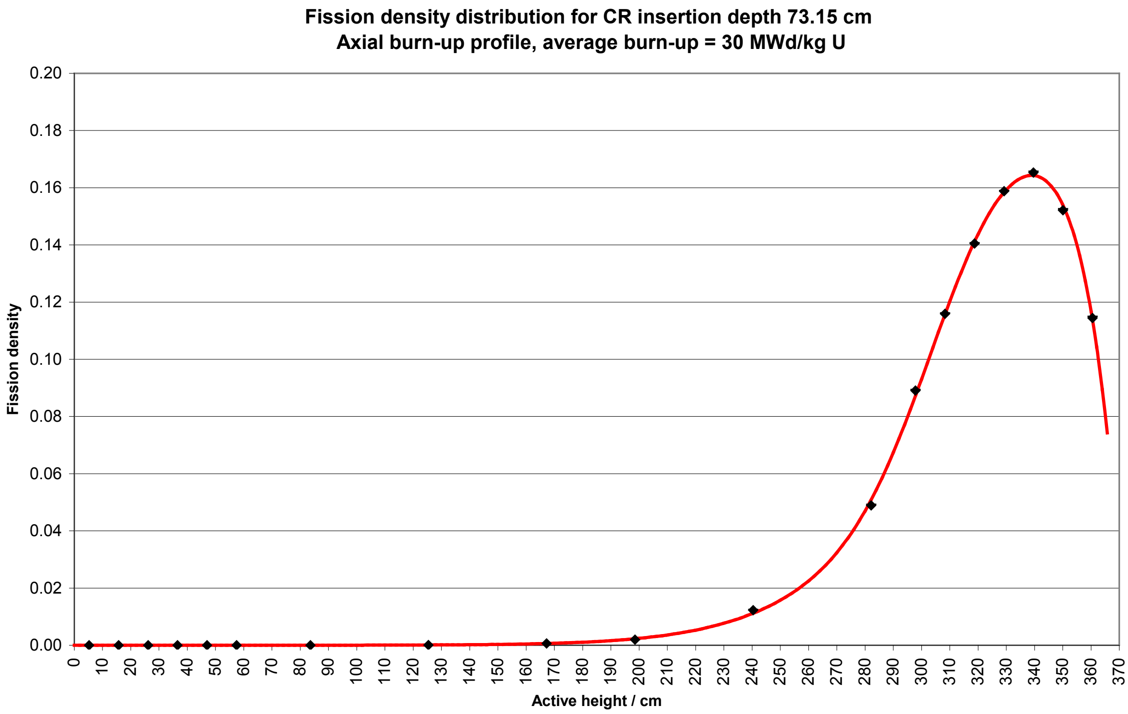


Figure 9.32b

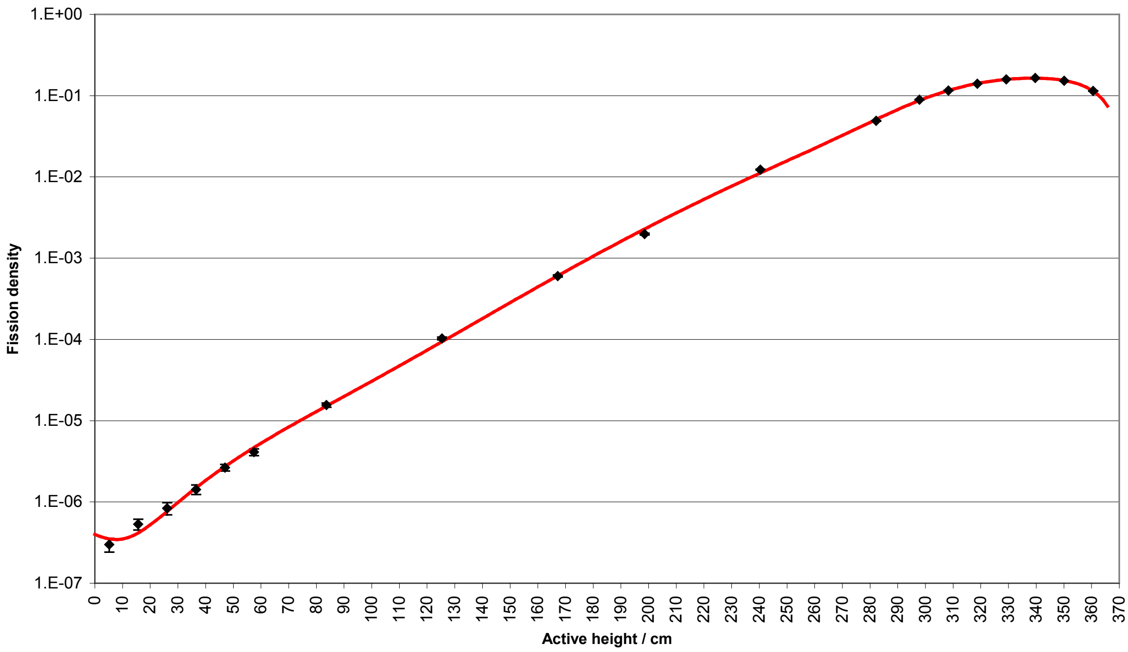


Figure 9.33: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 94.05 cm

Figure 9.33a

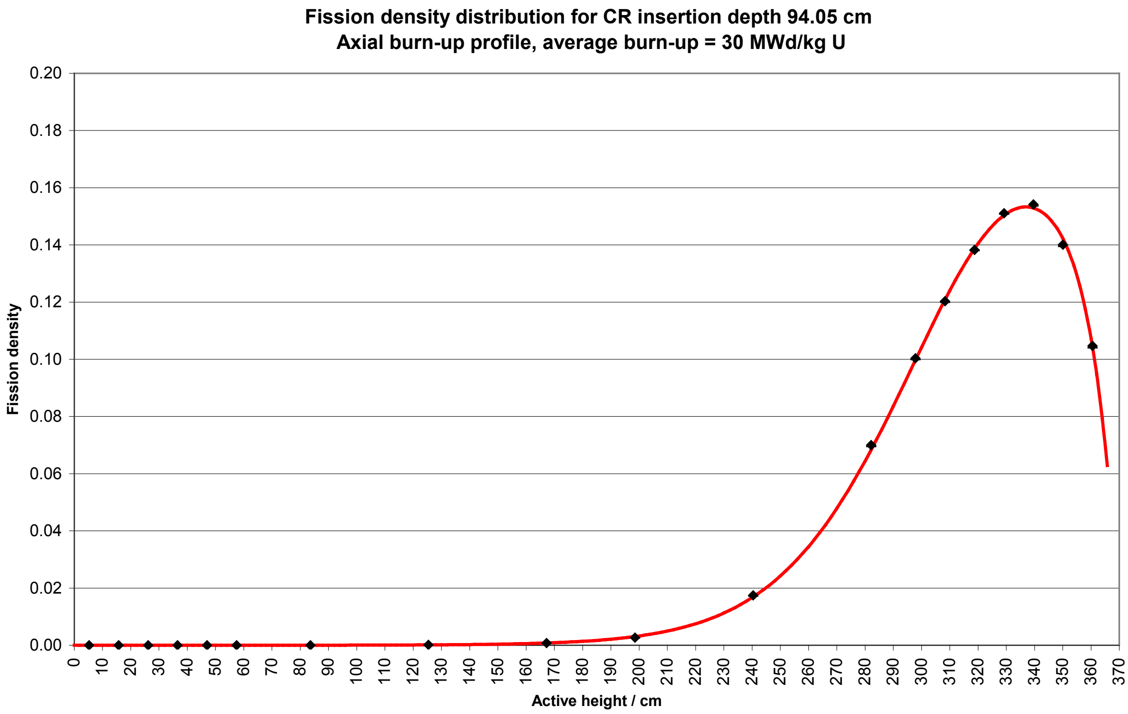


Figure 9.33a

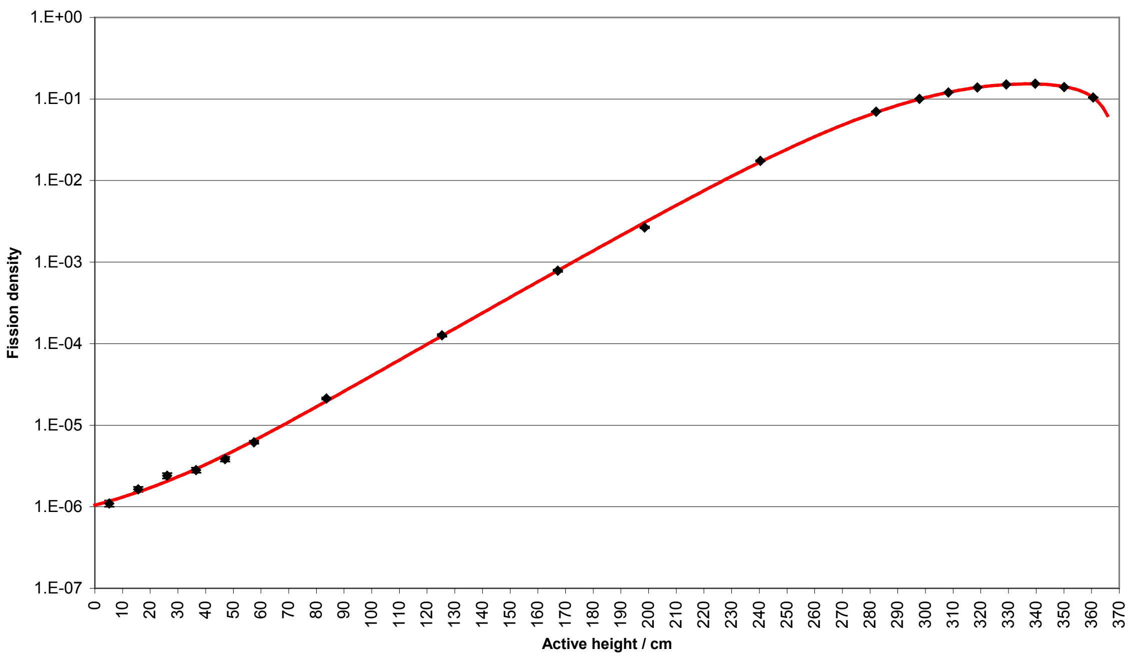


Figure 9.34: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 156.75 cm

Figure 9.34a

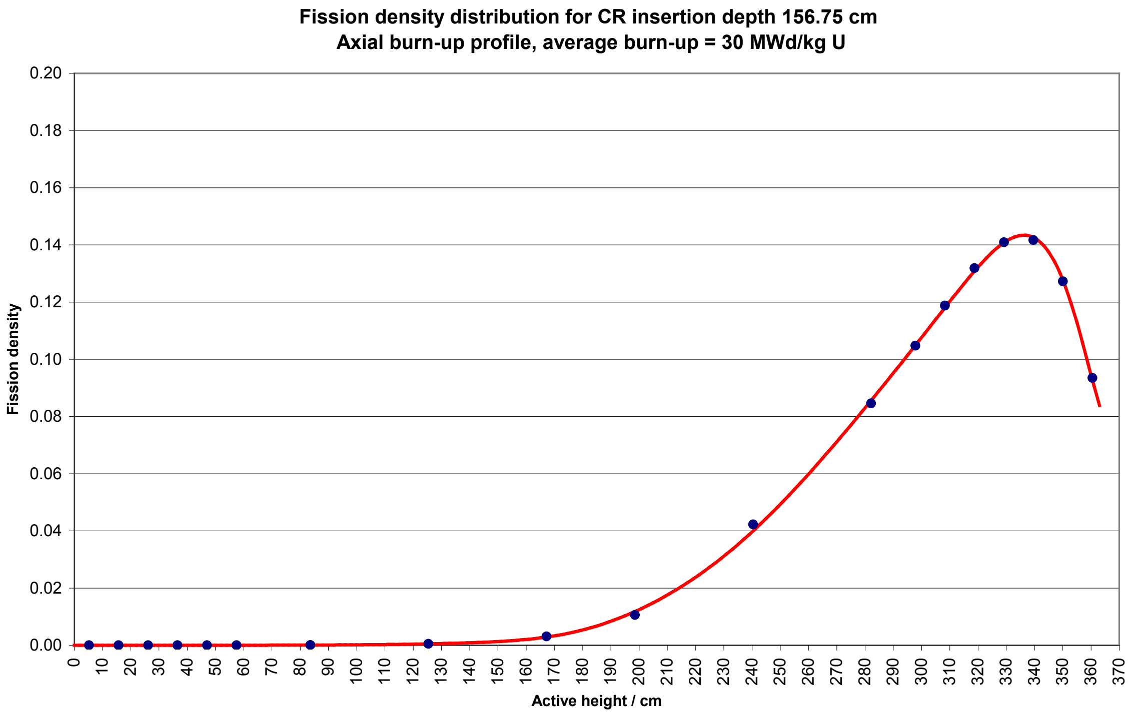


Figure 9.34b

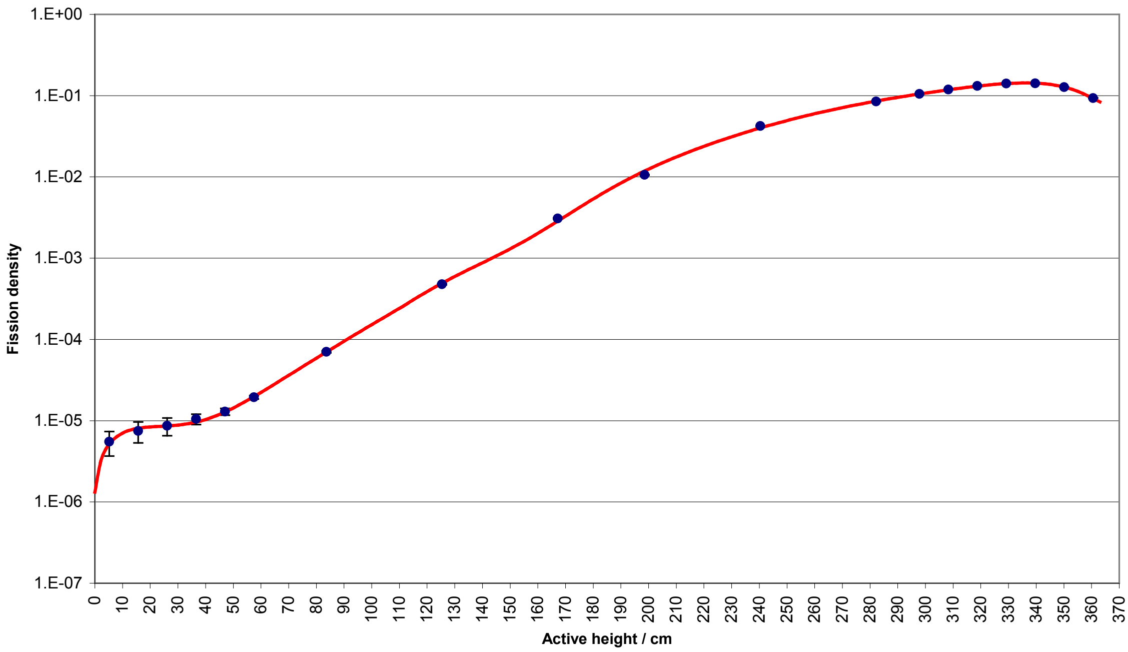


Figure 9.35: 30 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 365.76 cm (full CR insertion)

Figure 9.35a

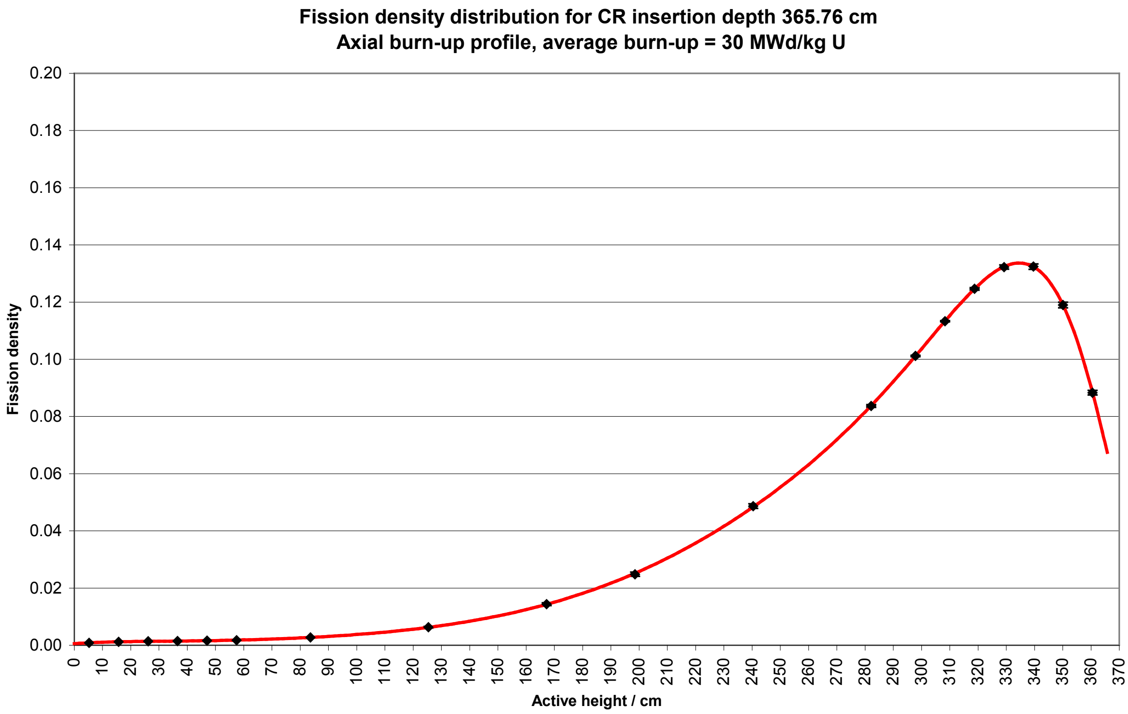


Figure 9.35b

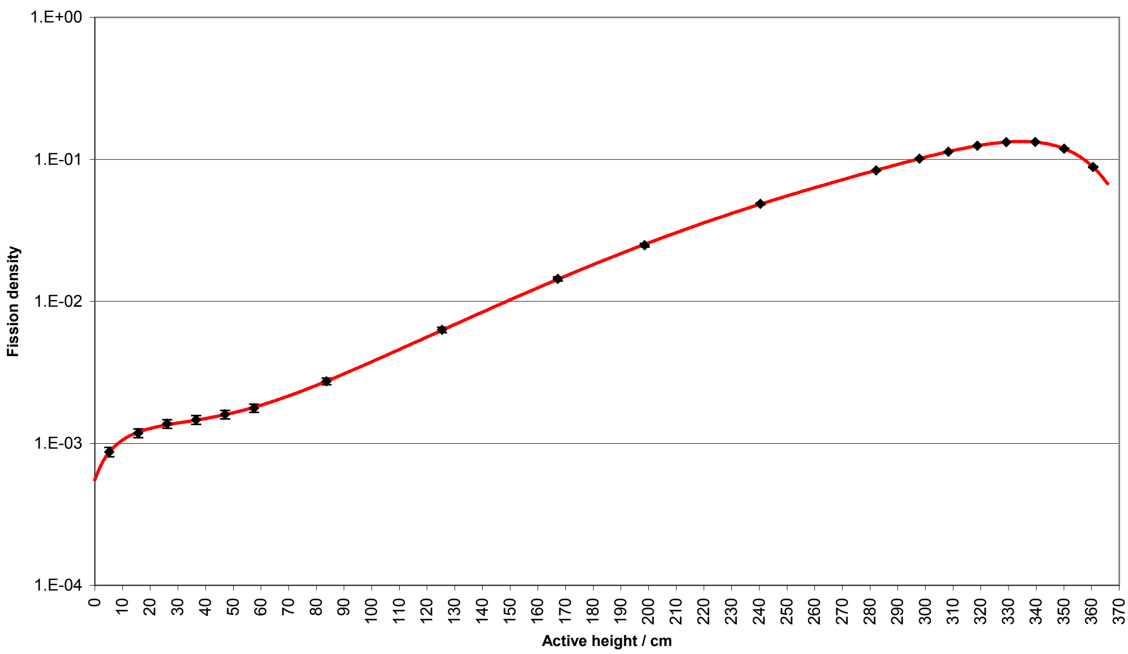


Figure 9.36: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 0 cm (no CR insertion)

Figure 9.36a

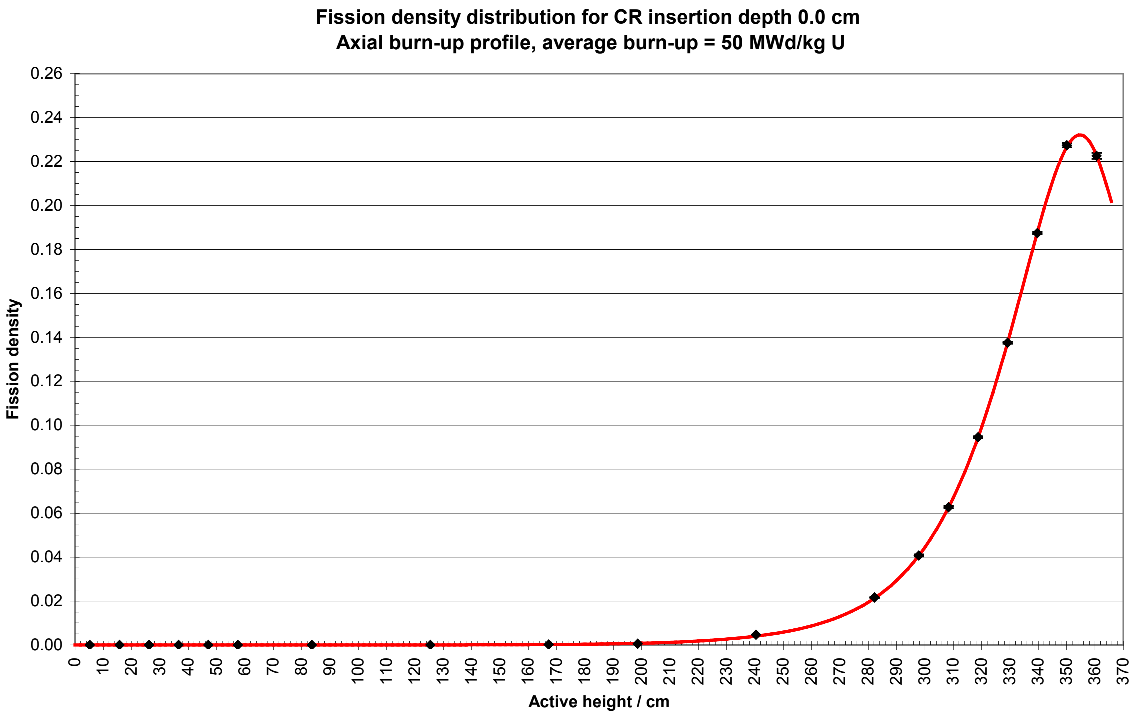


Figure 9.36b

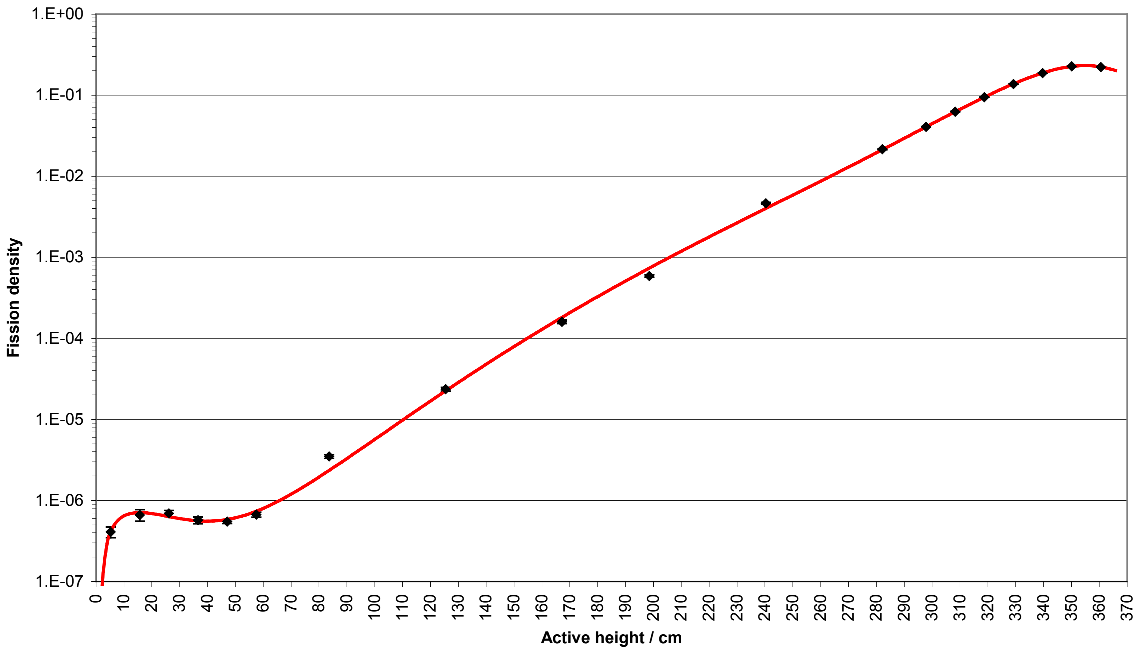


Figure 9.37: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 5.22 cm

Figure 9.37a

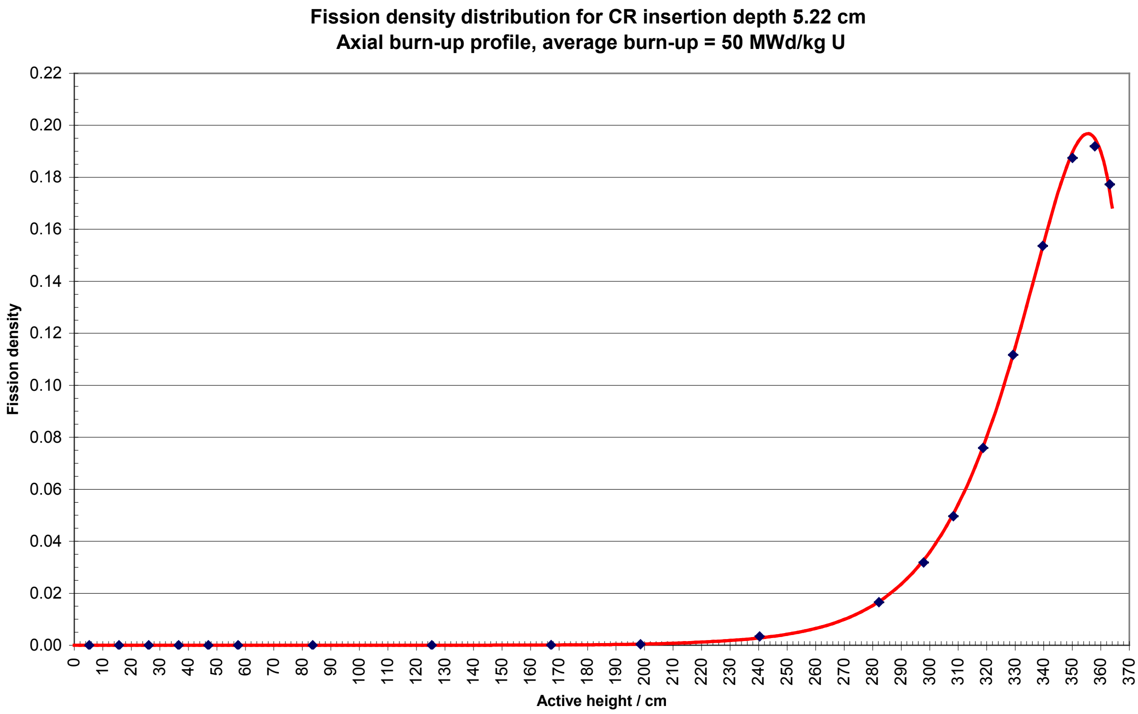


Figure 9.37a

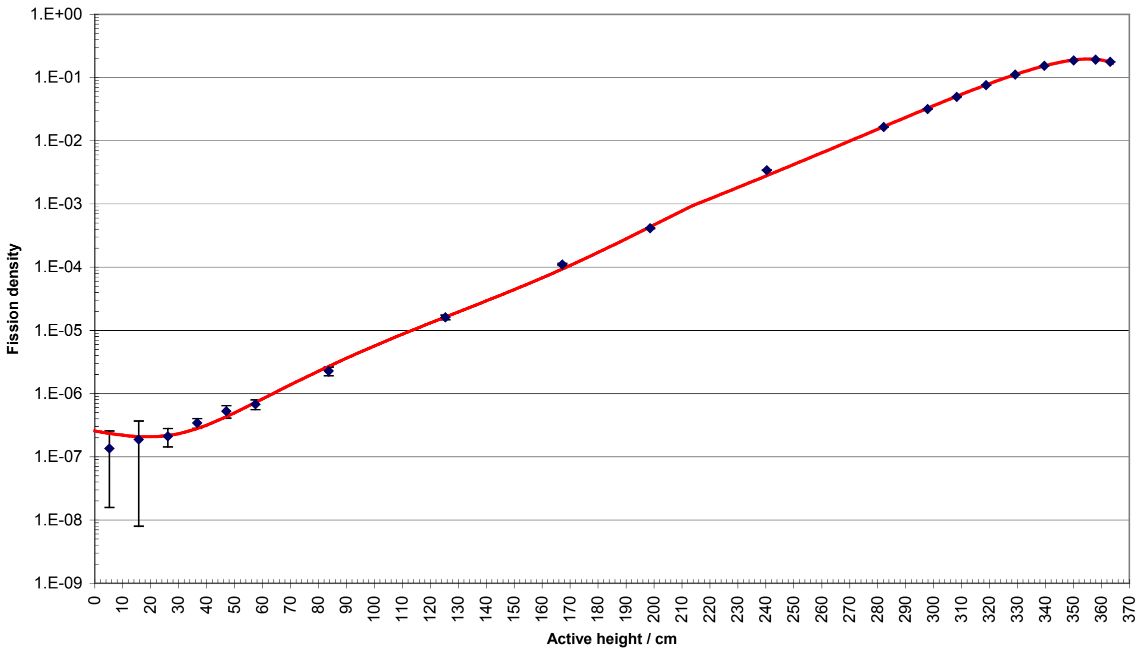


Figure 9.38: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 10.45 cm

Figure 9.38a

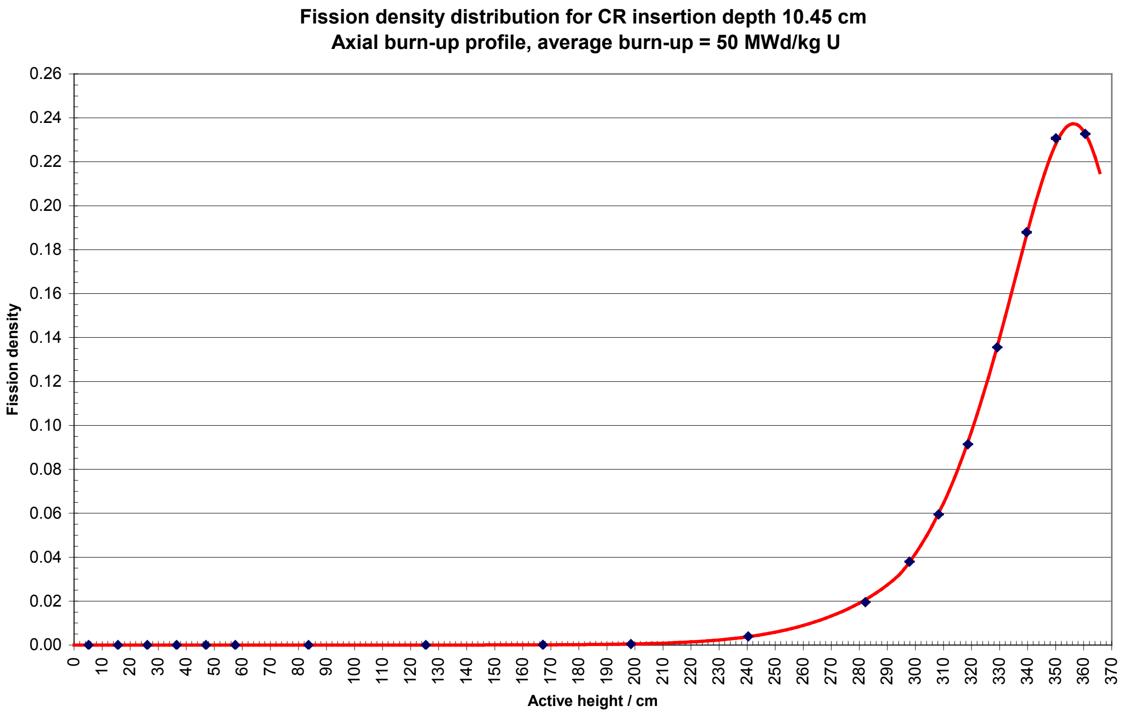


Figure 9.38b

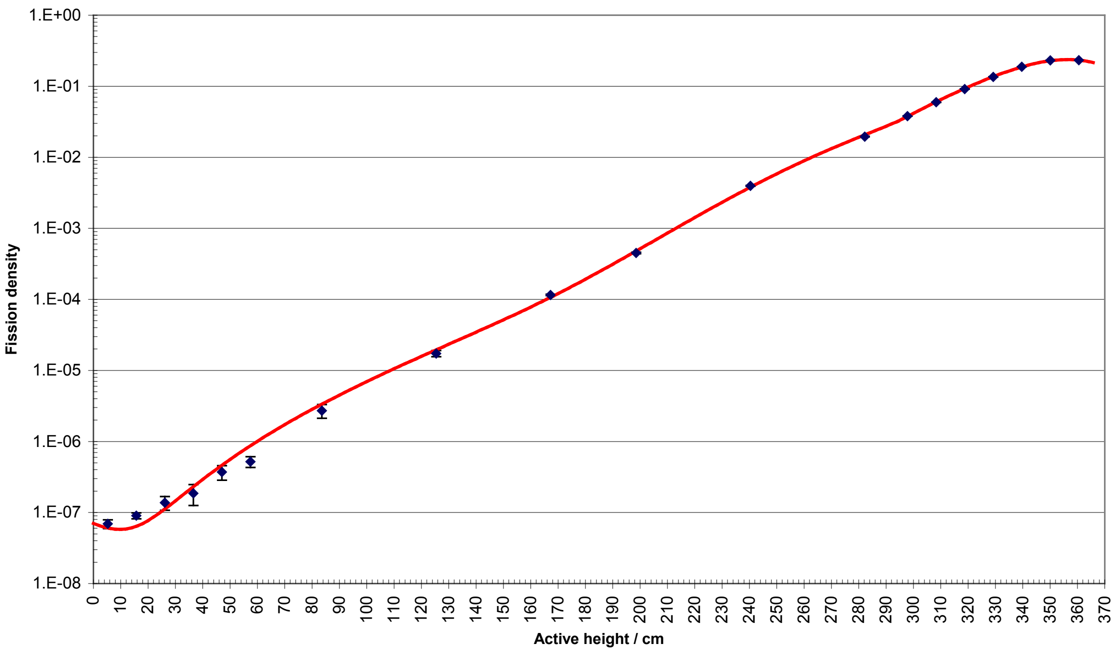


Figure 9.39: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 15.67 cm

Figure 9.39a

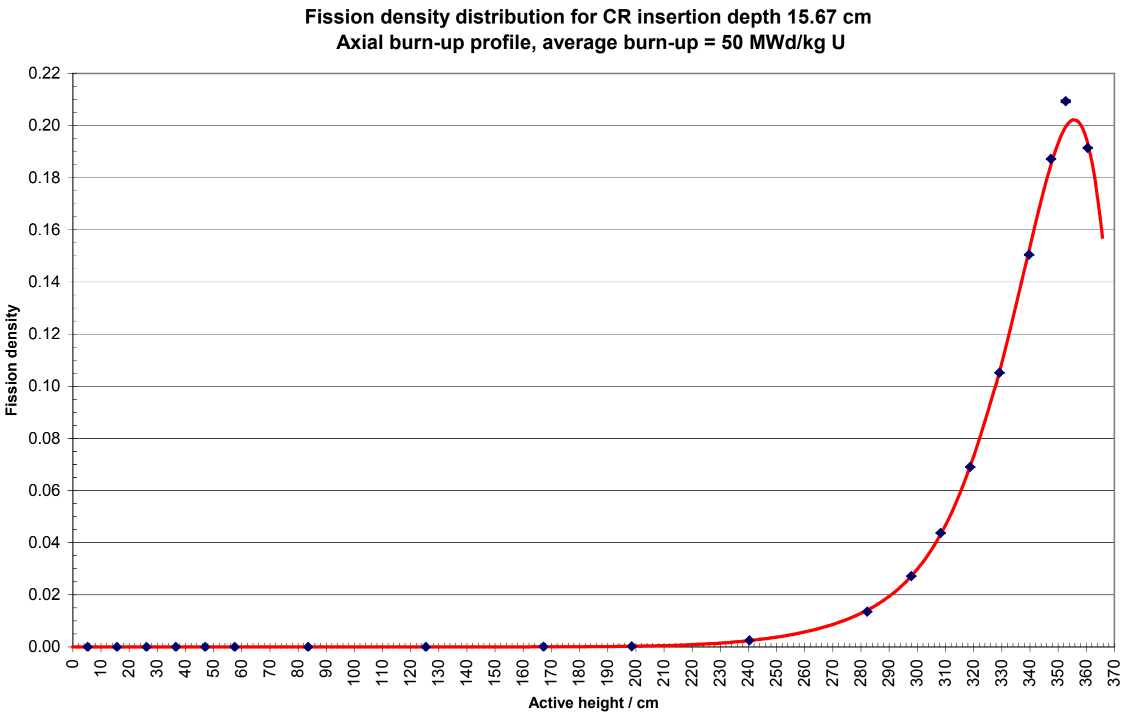


Figure 9.39b

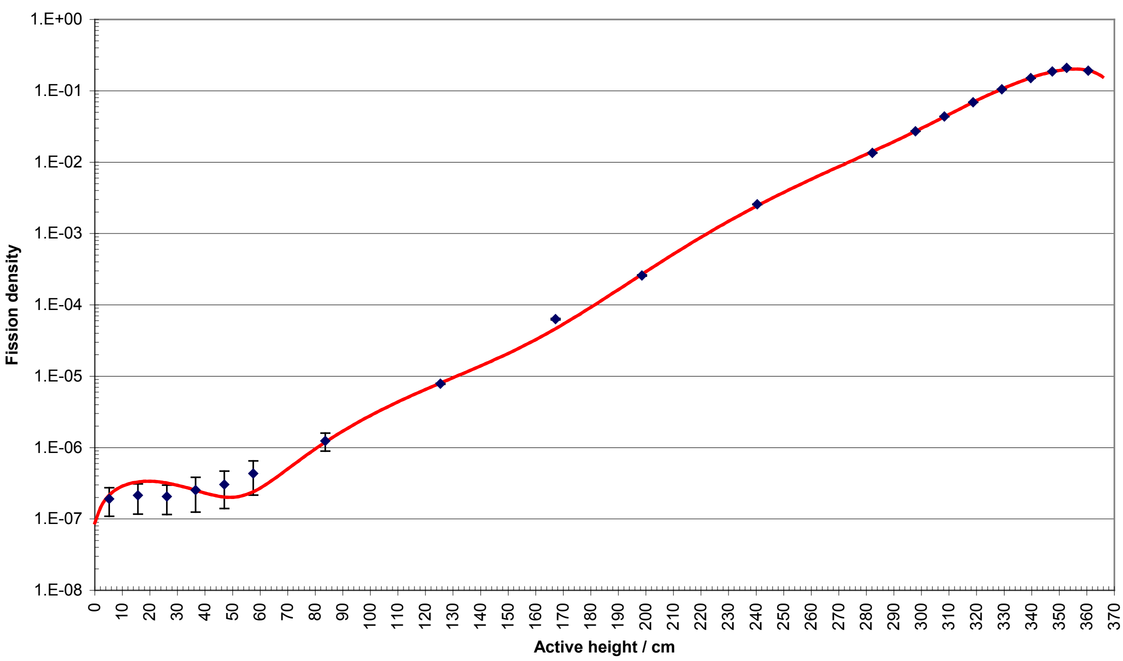


Figure 9.40: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 20.90 cm

Figure 9.40a

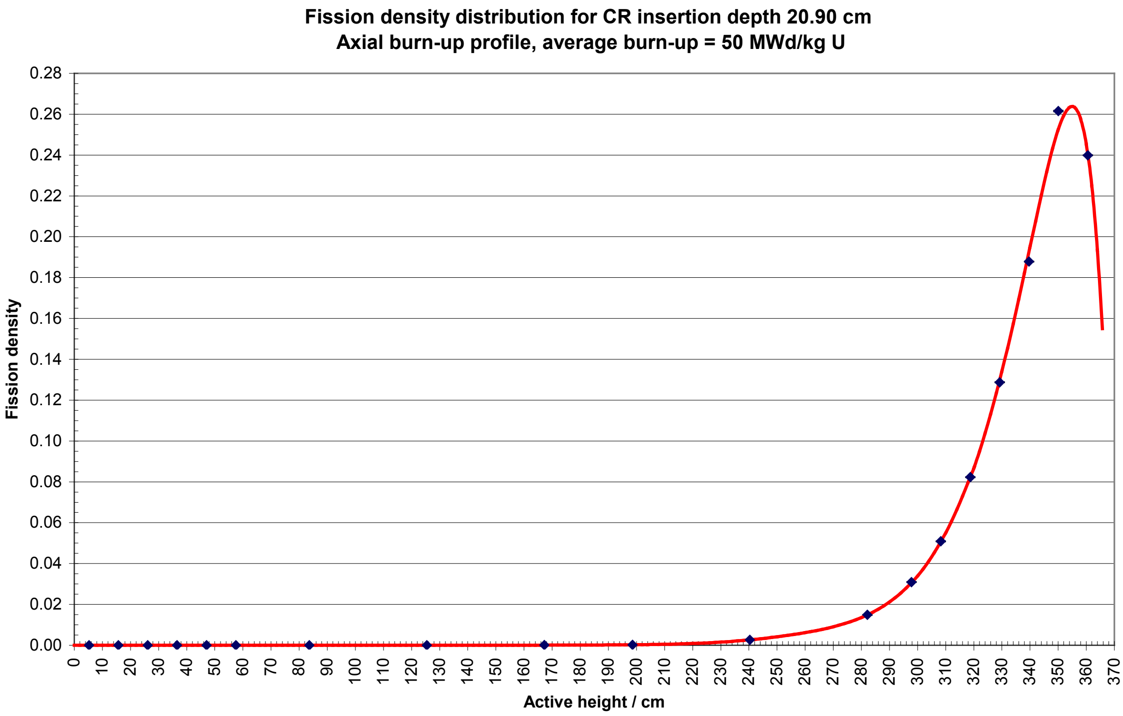


Figure 9.40b

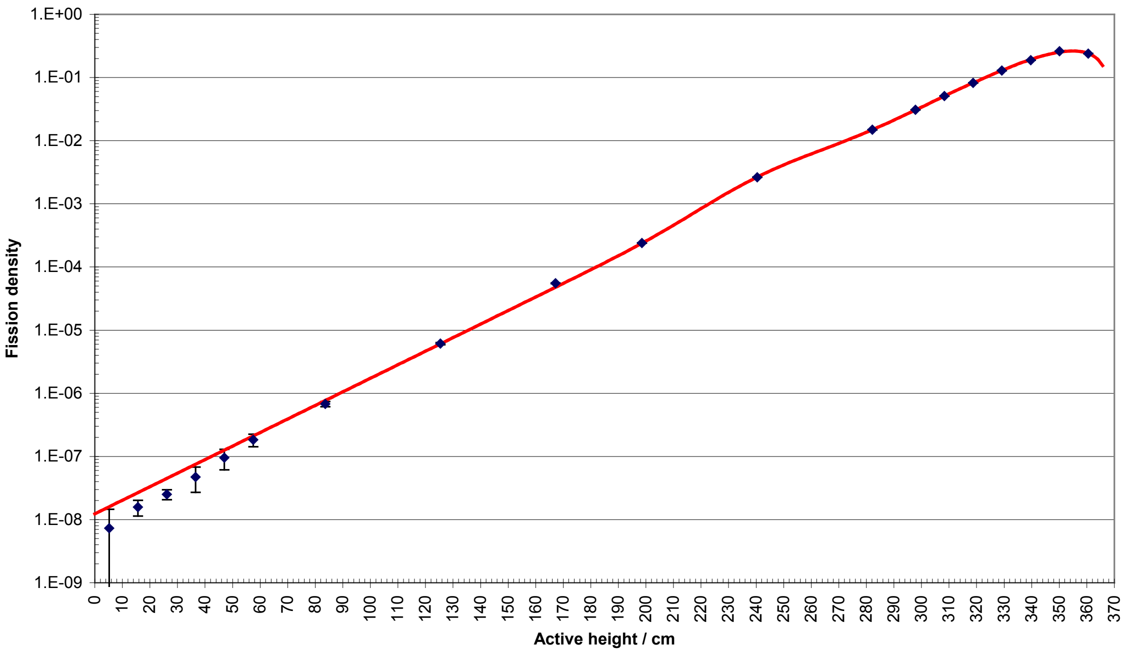


Figure 9.41: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 26.12 cm

Figure 9.41a

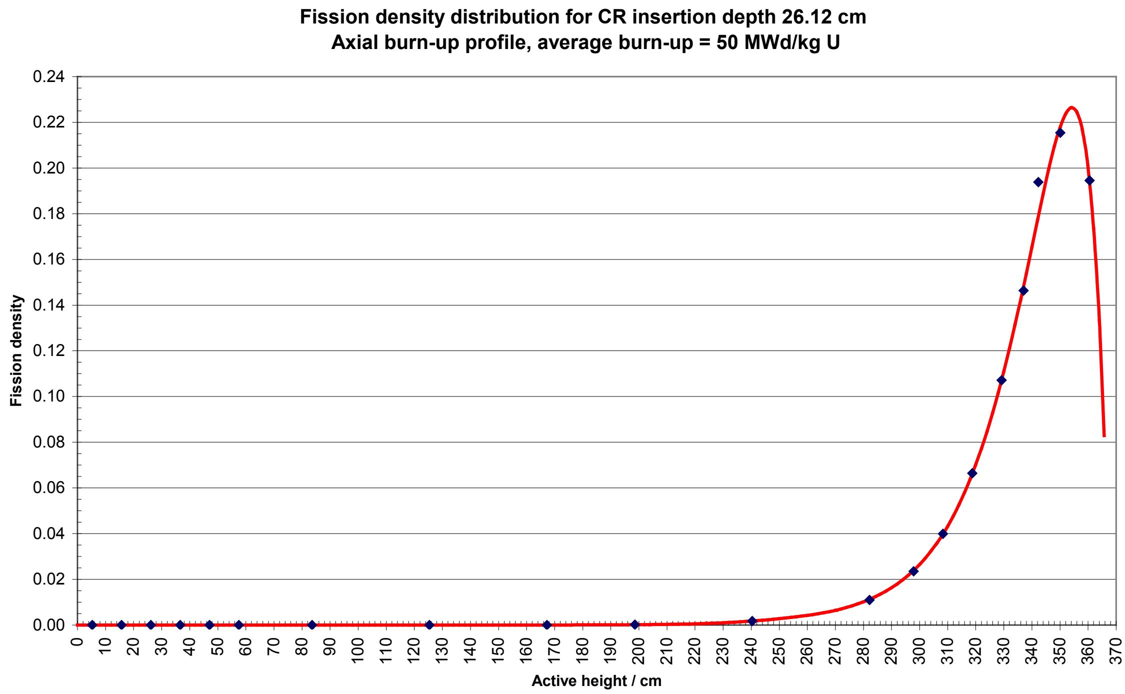


Figure 9.41b

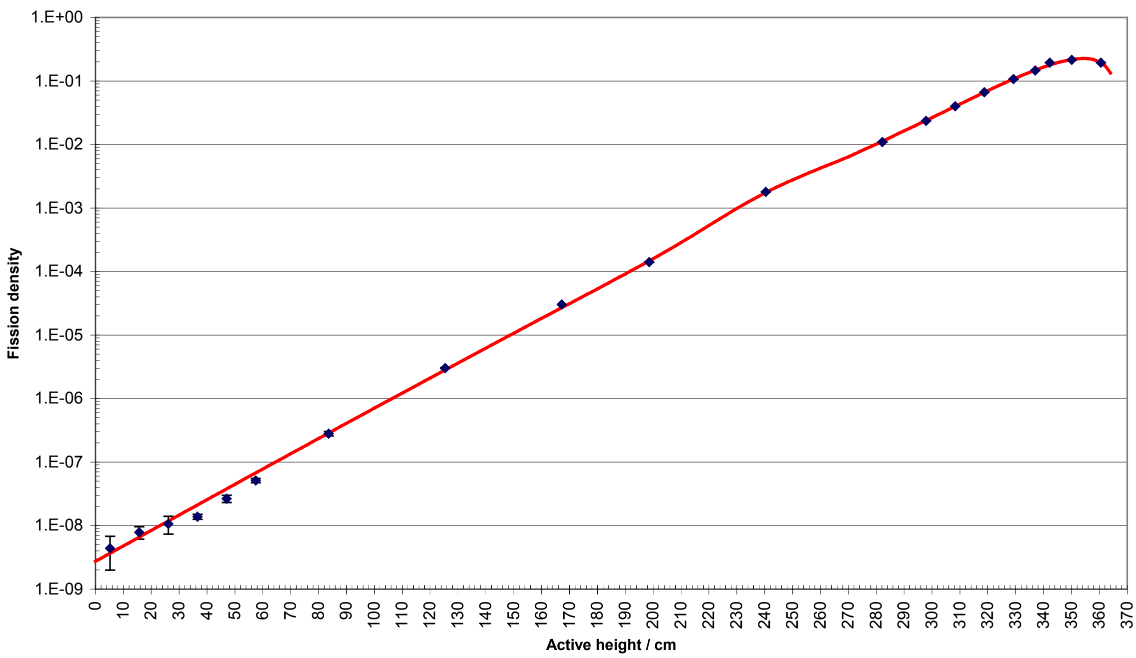


Figure 9.42: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 31.35 cm

Figure 9.42a

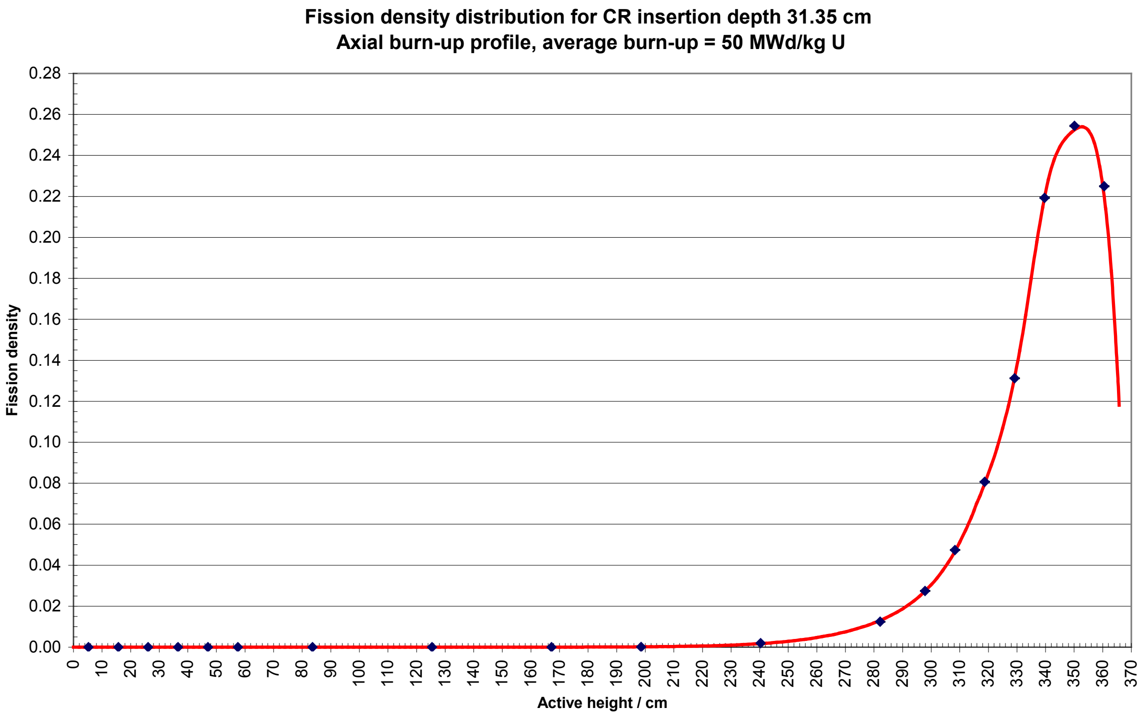
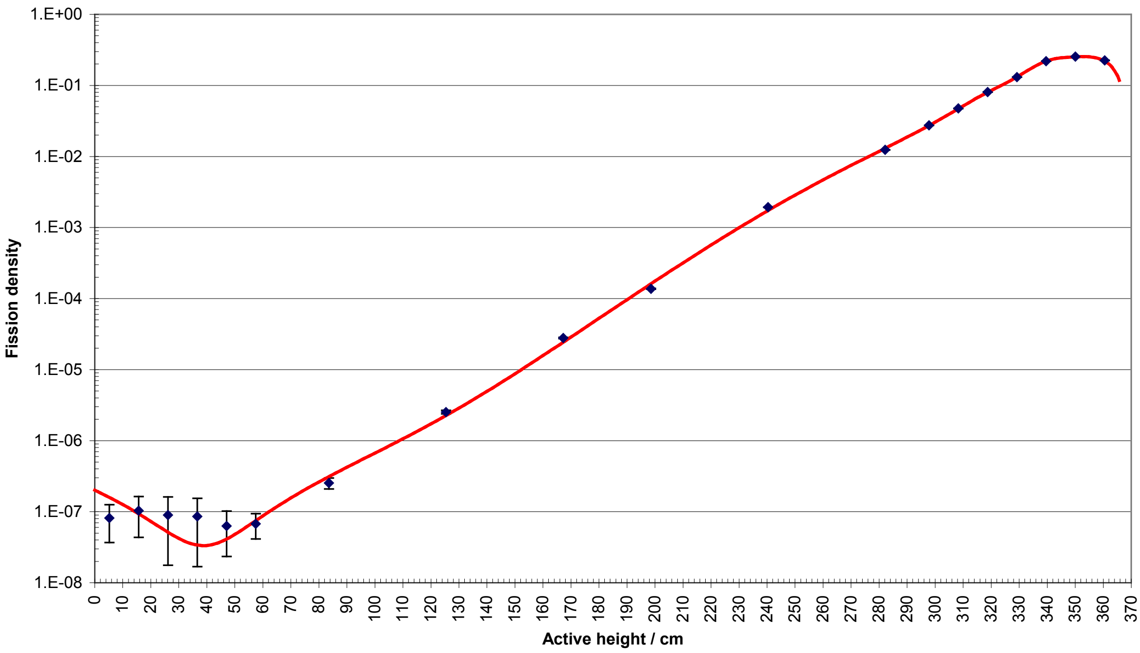


Figure 9.42b*)



*) Sometimes the curve fitting in the bottom end region (lowest 60 cm) of the fuel zone is not quite reasonable, but in all these cases it is obvious that this does not affect the estimation of the top end content C7.

Figure 9.43: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 36.57 cm

Figure 9.43a

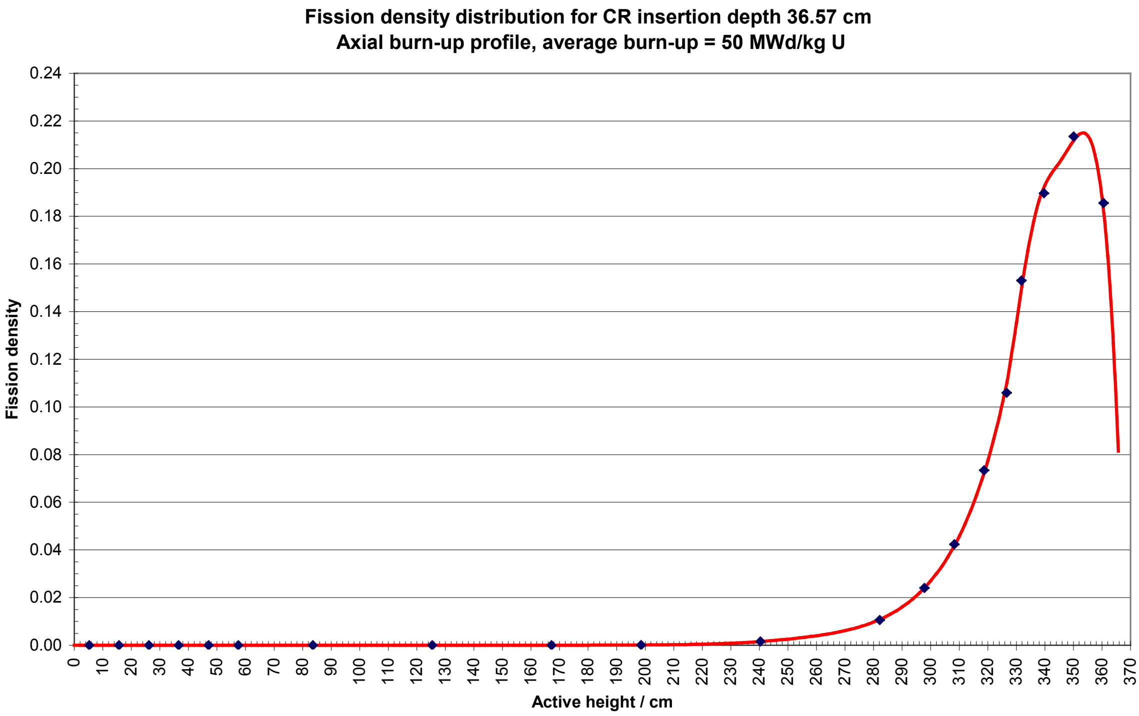


Figure 9.43b

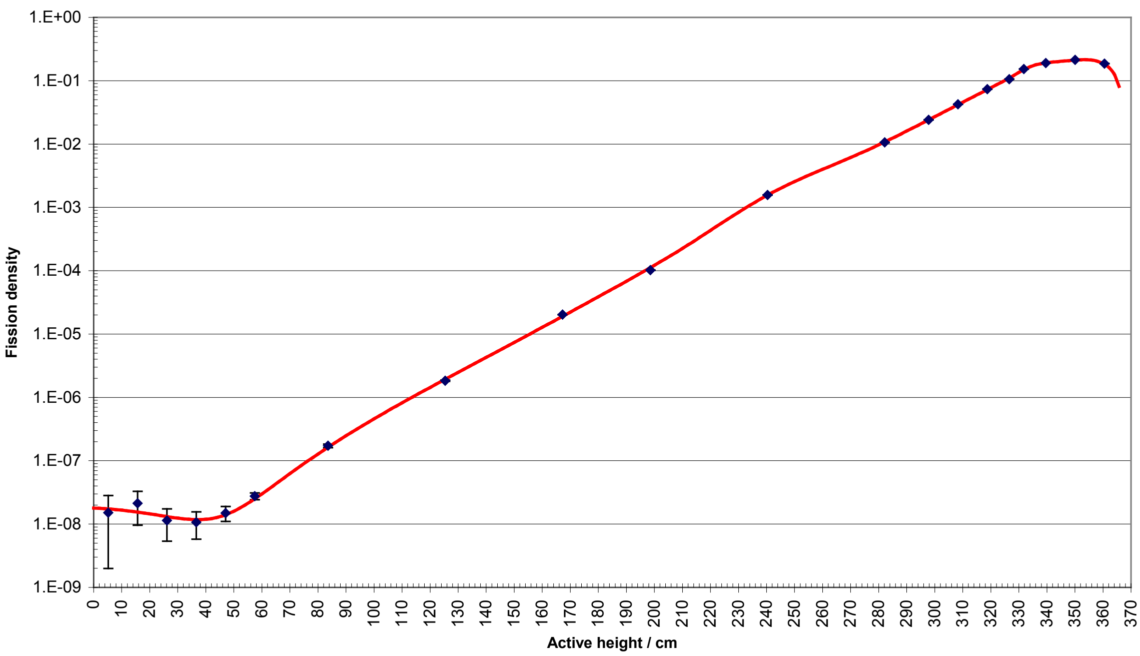


Figure 9.44: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 41.80 cm

Figure 9.44a

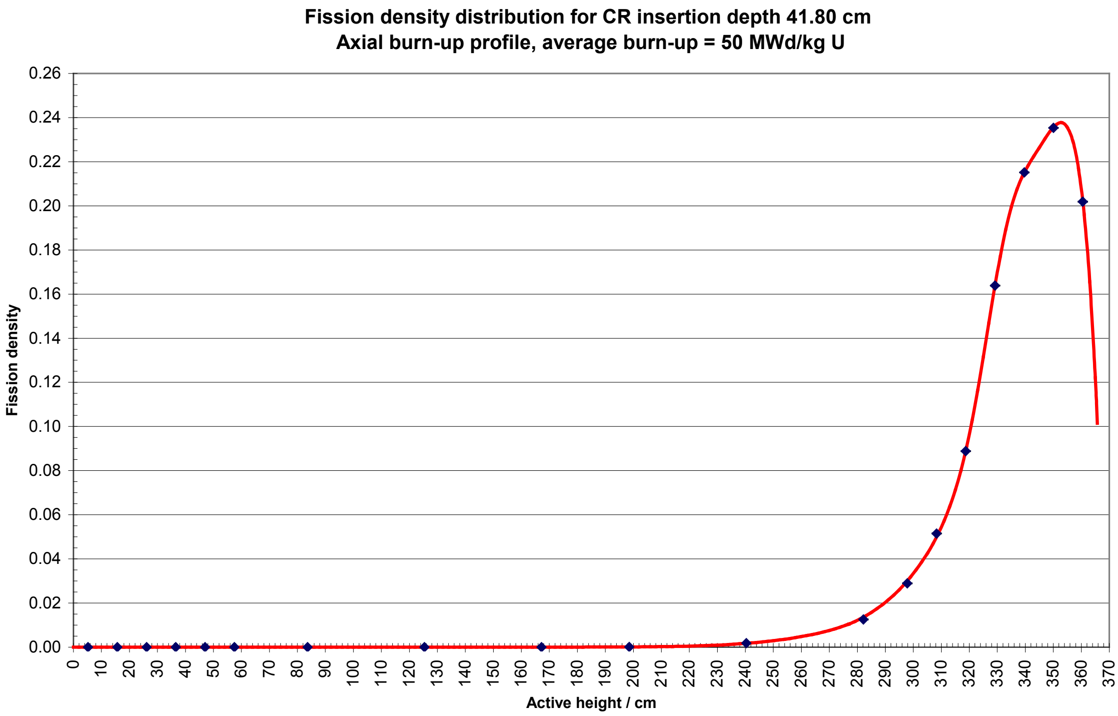


Figure 9.44b

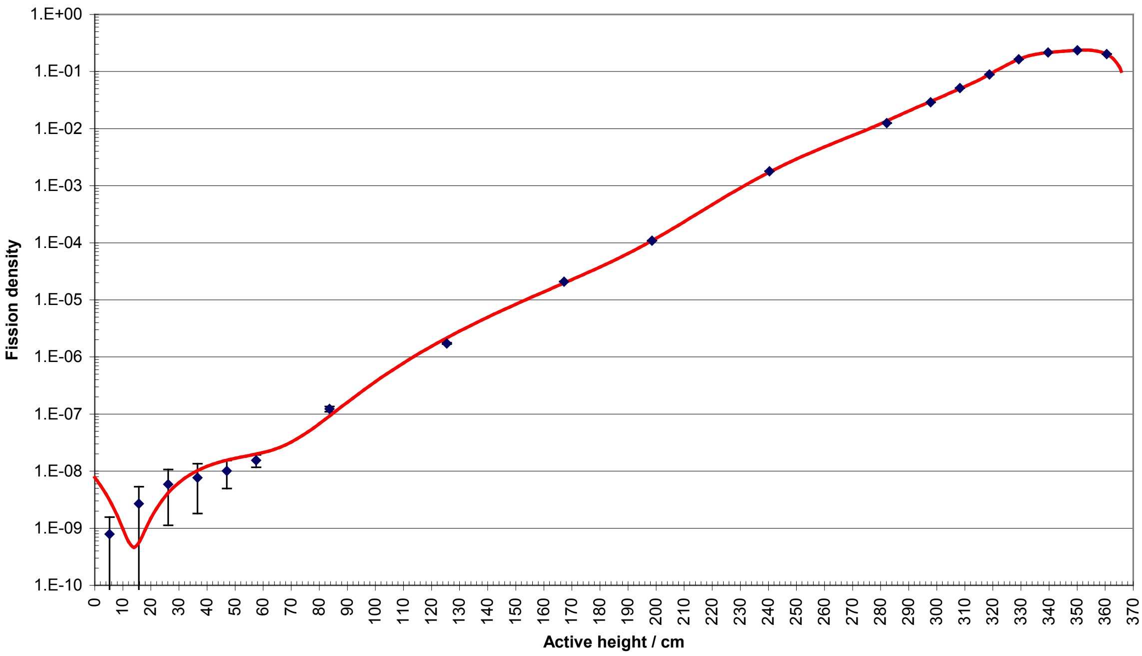


Figure 9.45: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 52.25 cm

Figure 9.45a

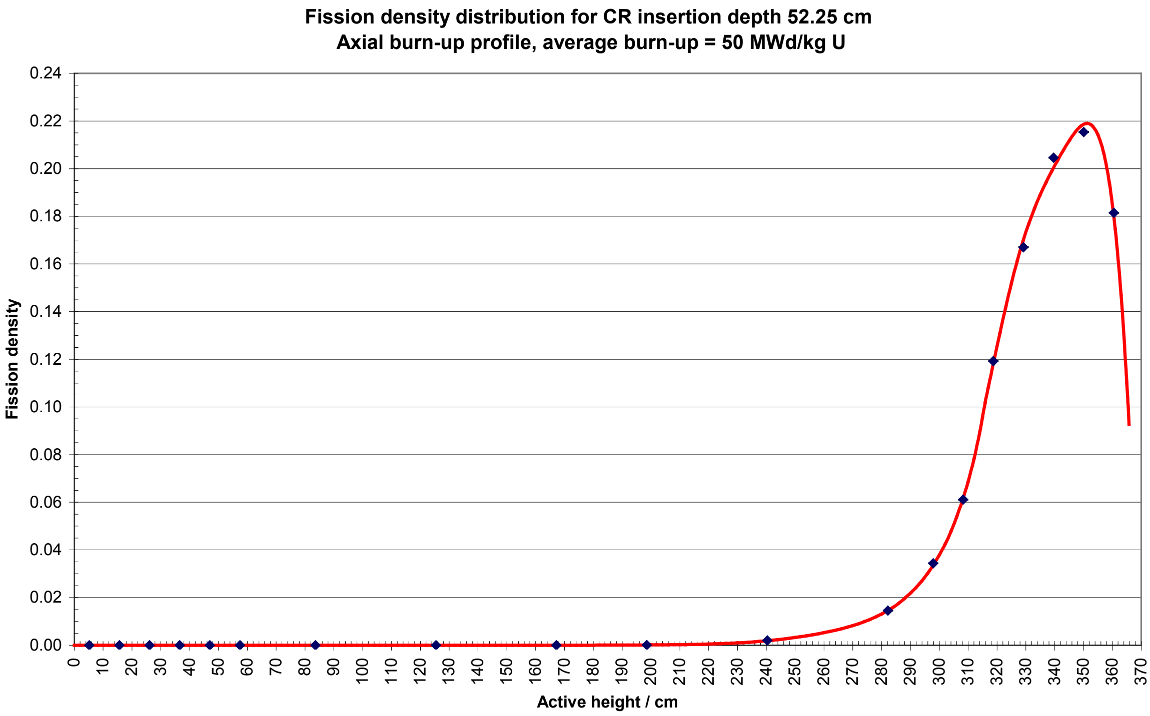


Figure 9.45b

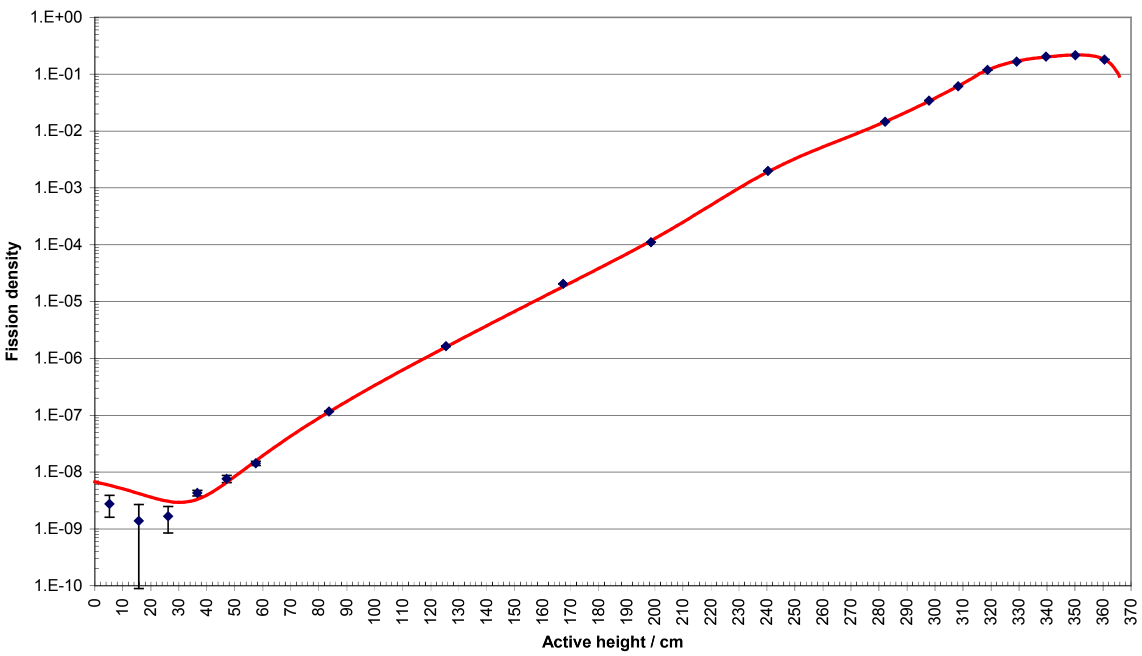


Figure 9.46: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 62.70 cm

Figure 9.46a

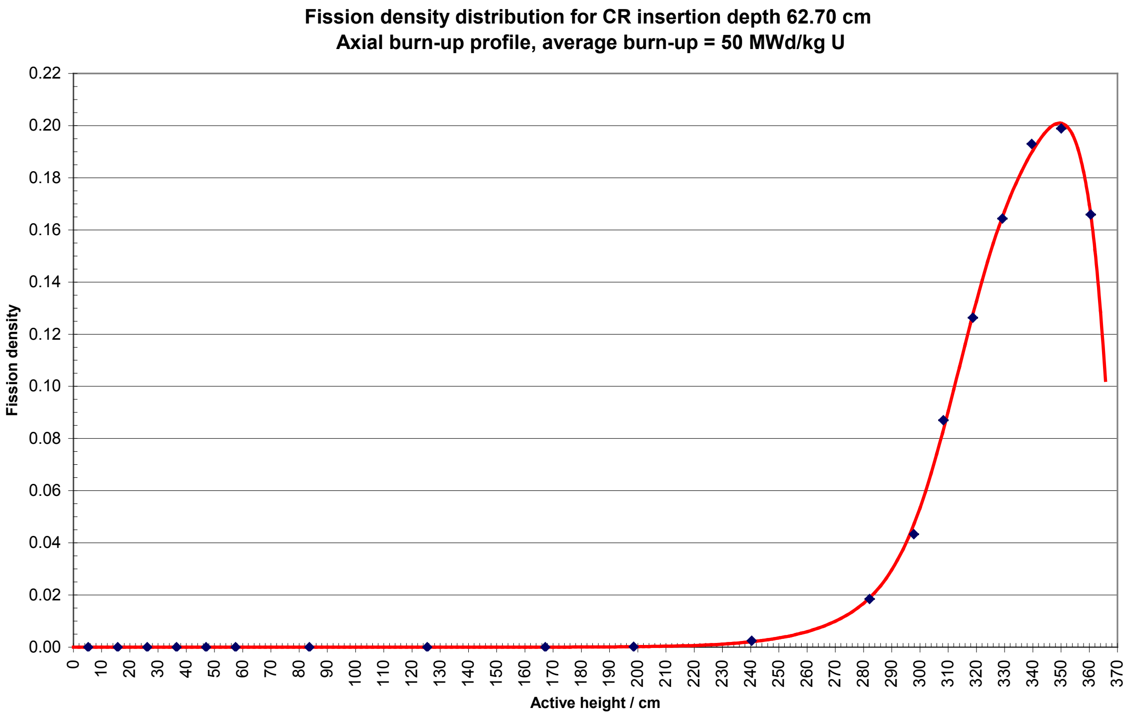


Figure 9.46b

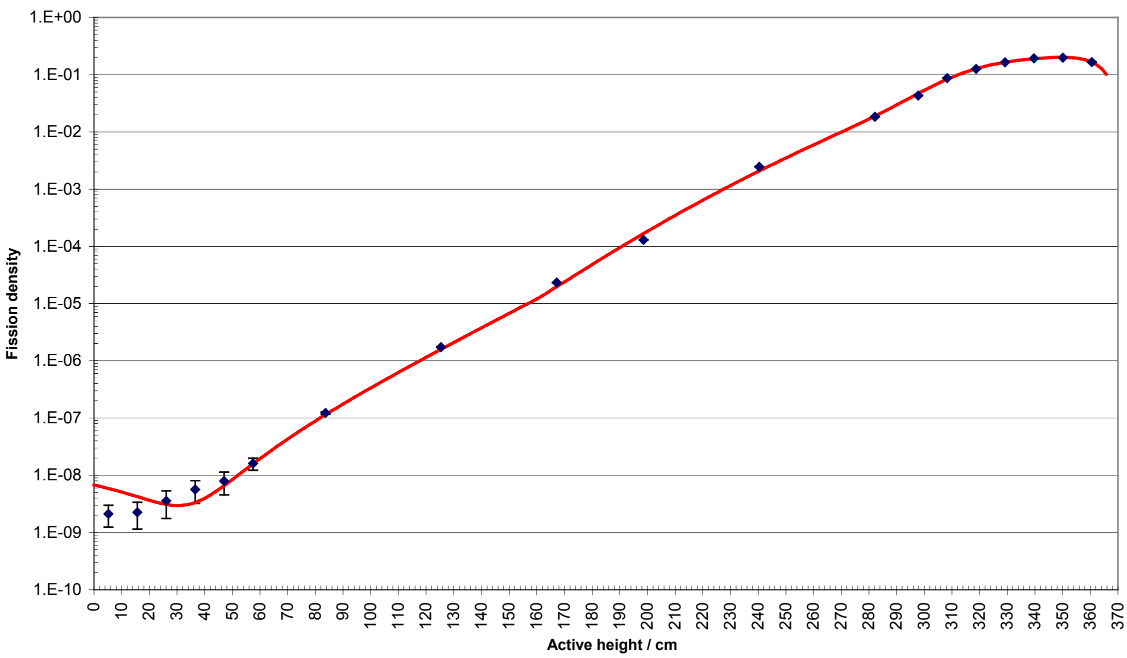


Figure 9.47: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 73.15 cm

Figure 9.47a

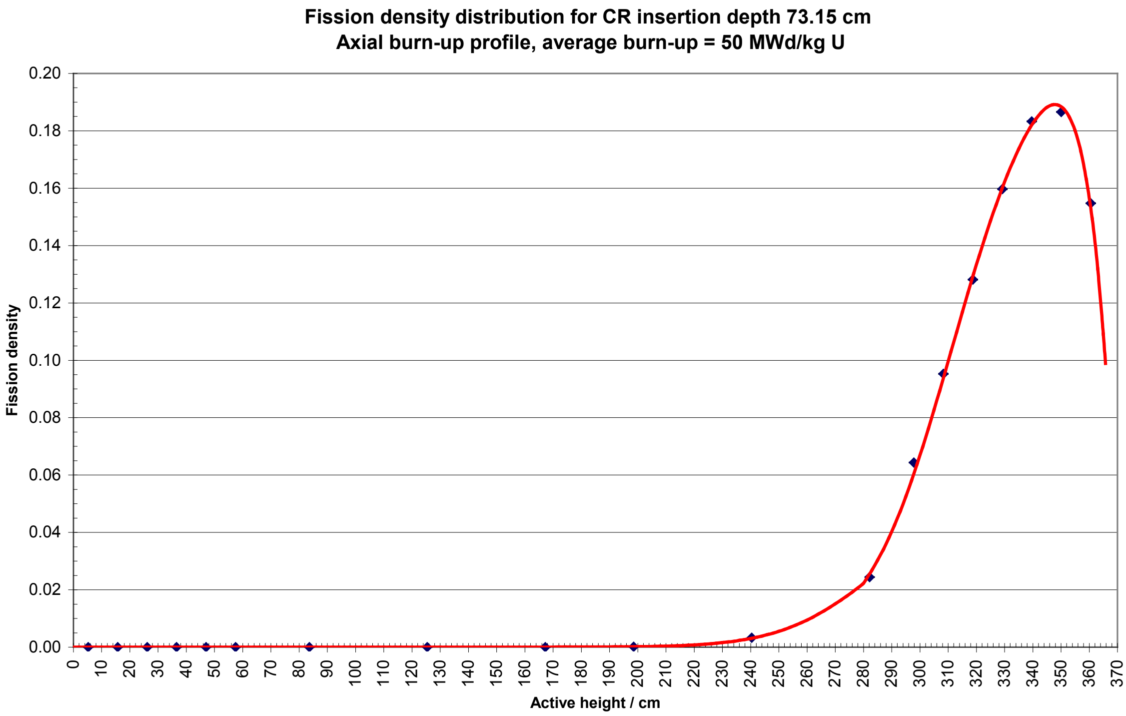


Figure 9.47b

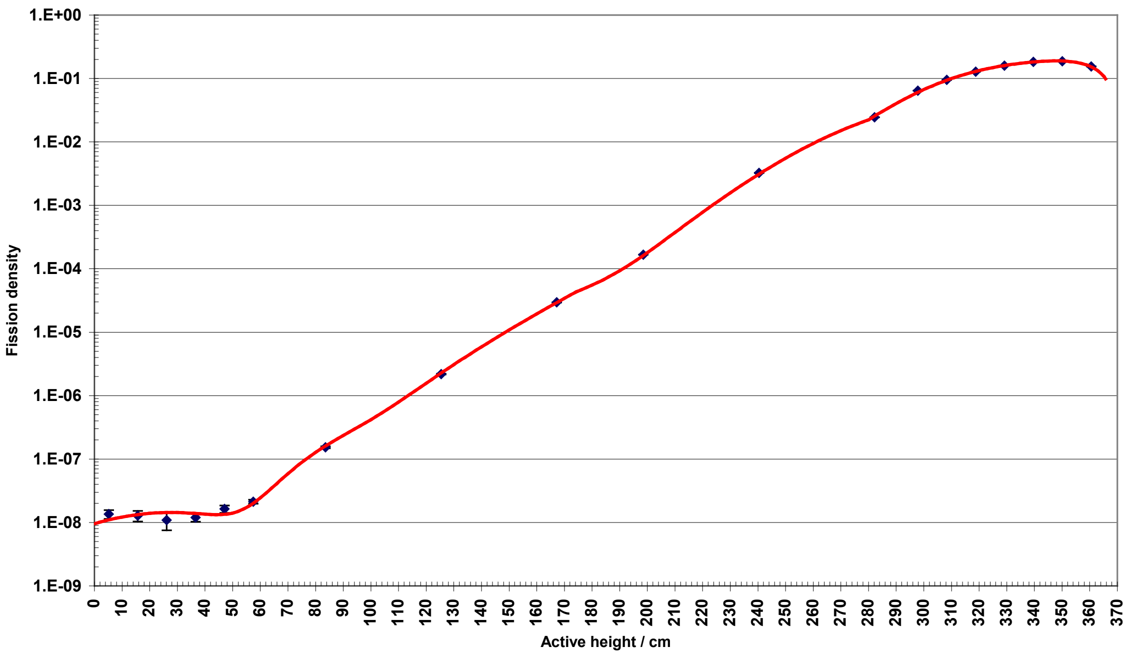


Figure 9.48: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 94.05 cm

Figure 9.48a

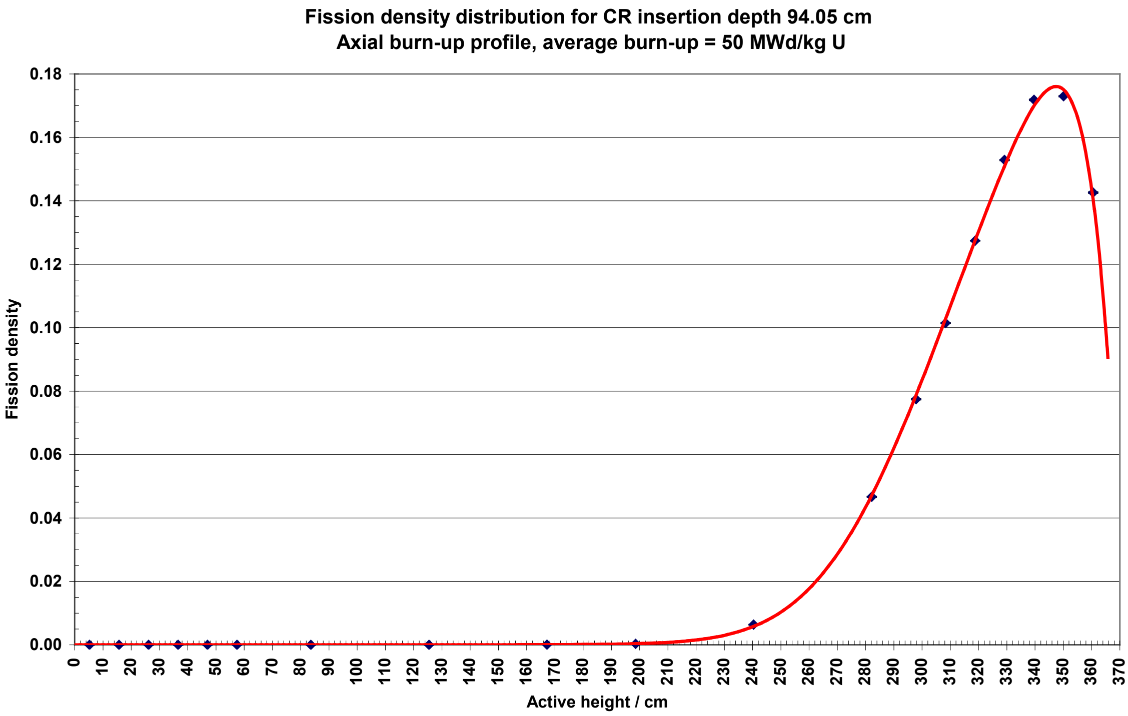


Figure 9.48b

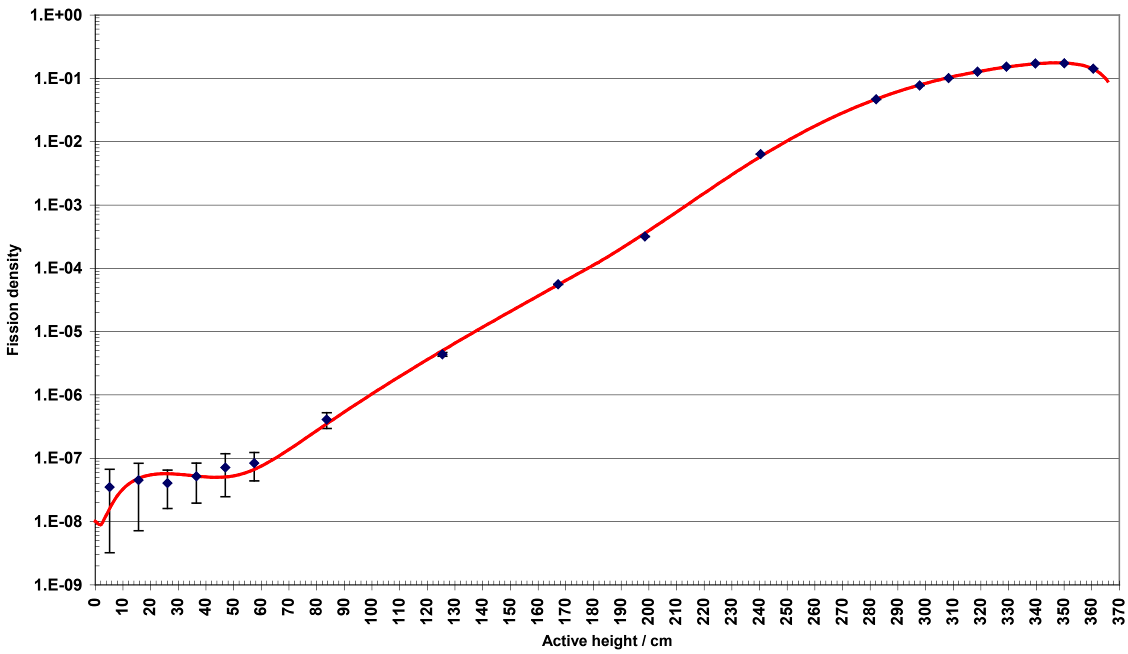


Figure 9.49: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 156.75 cm

Figure 9.49a

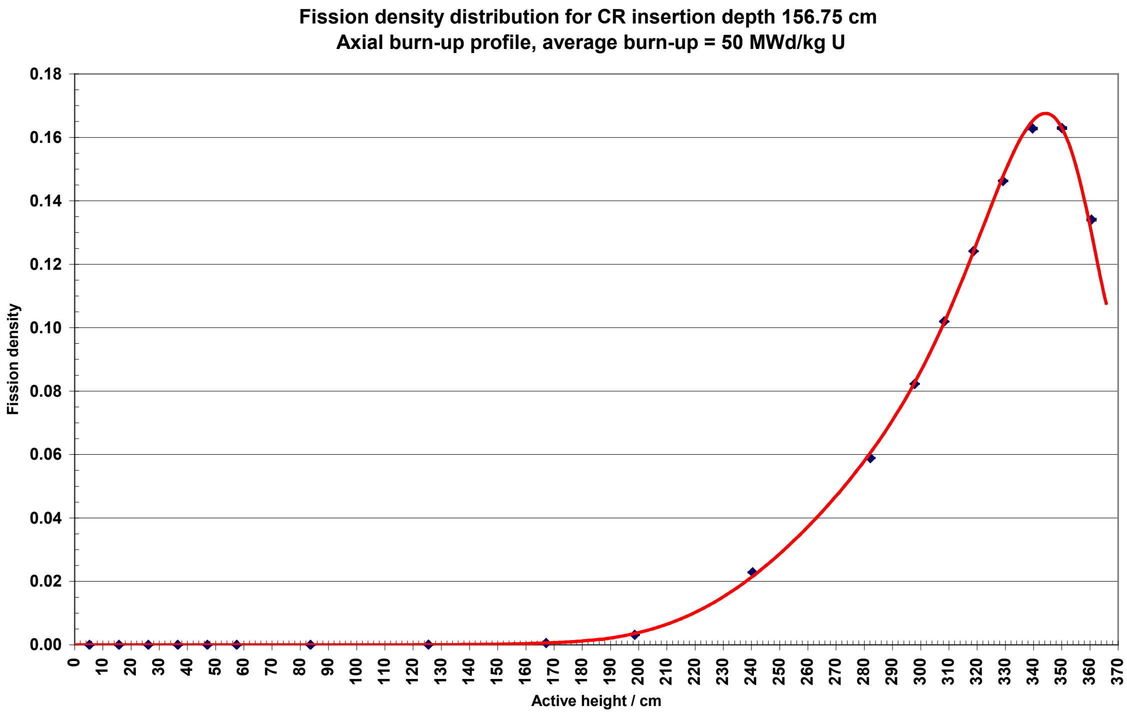


Figure 9.49b

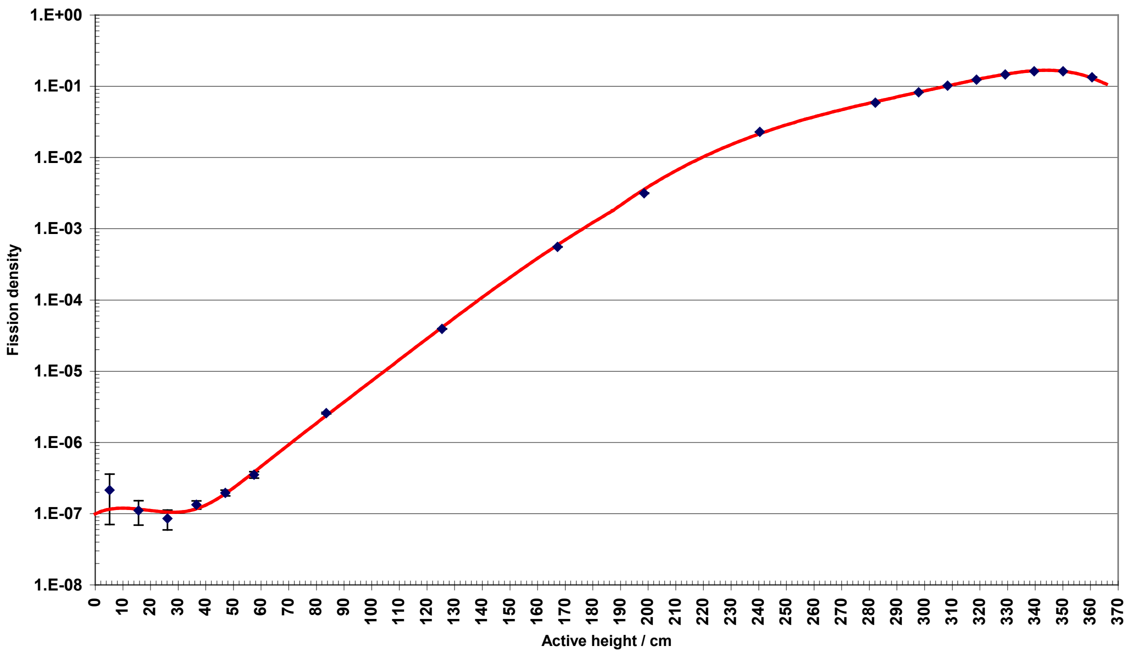


Figure 9.50: 50 MWd/kg U axial burn-up profile: Axial fission density distribution for CR insertion depth d_{CR} = 365.76 cm (full CR insertion)

Figure 9.50a

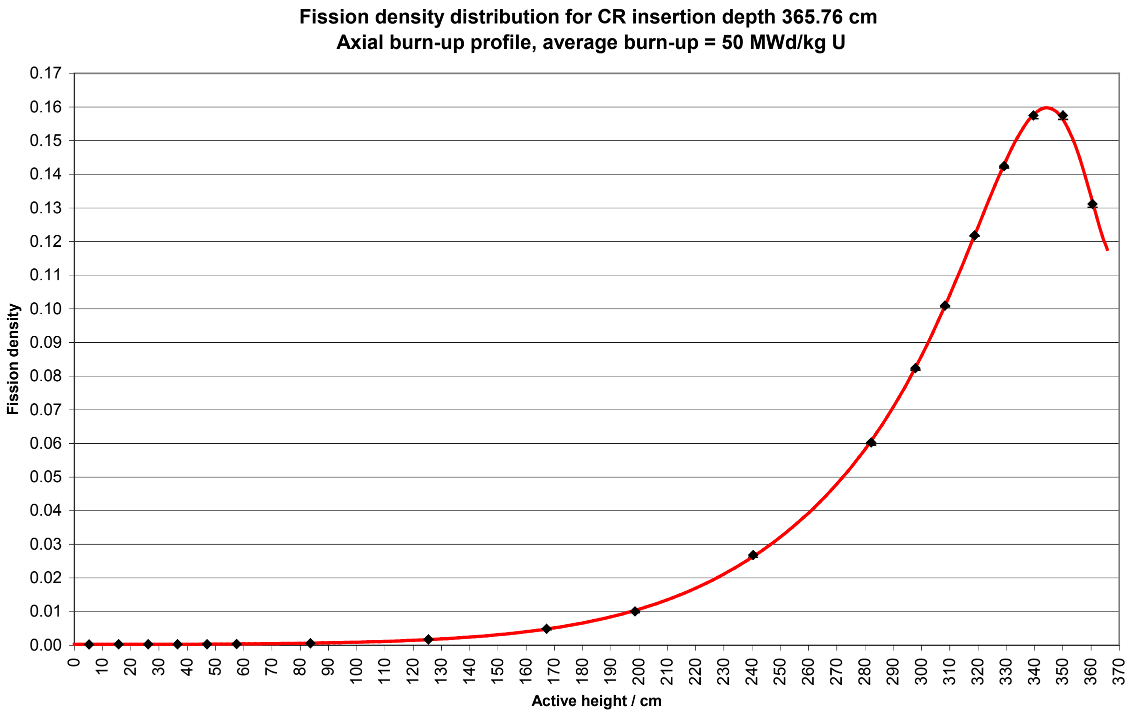


Figure 9.50b

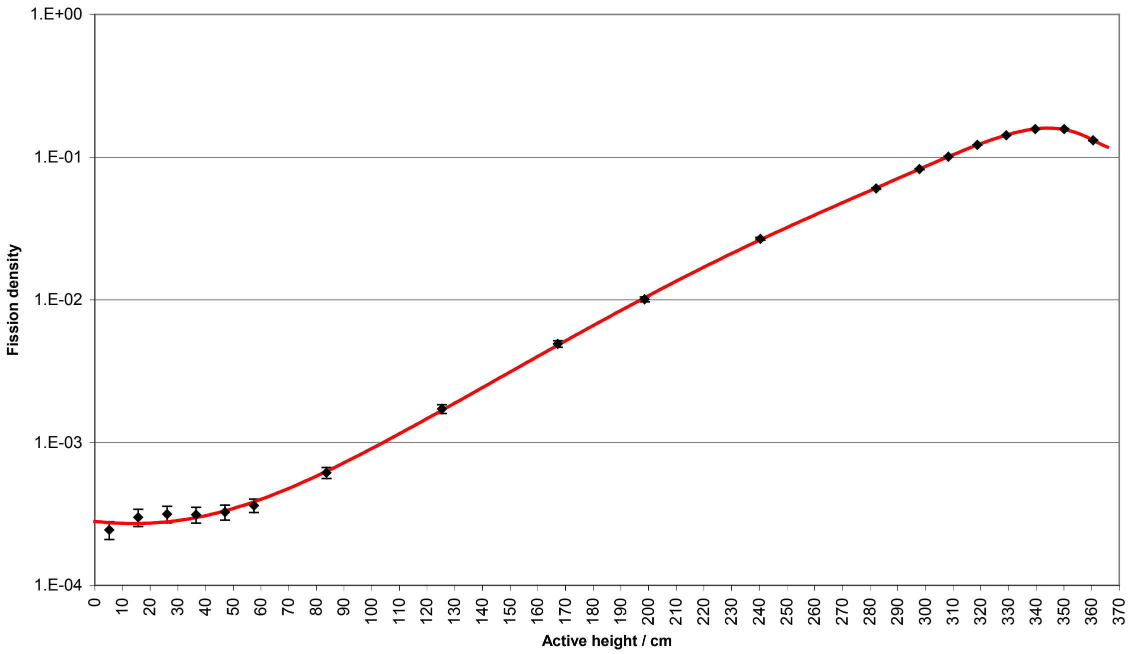


Figure 9.51: 30 MWd/kg U axial burn-up profile: Normalised axial fission density distributions for CR insertion depths 0 cm ≤ d_{CR} ≤ 41.80 cm

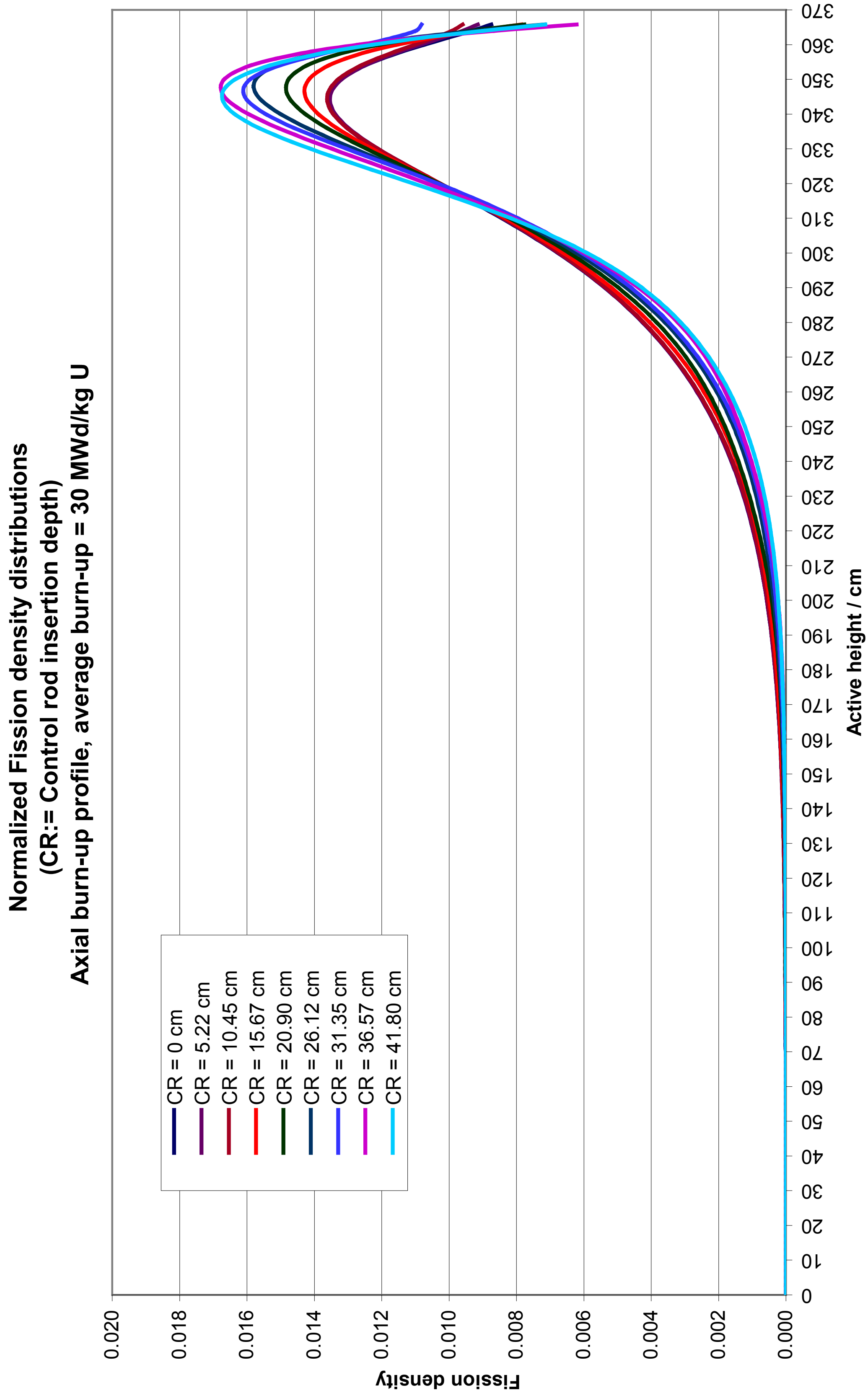


Figure 9.52: 30 MWd/kg U axial burn-up profile: Normalised axial fission density distributions for CR insertion depths 36.57 cm ≤ d_{CR} ≤ 365.76 cm

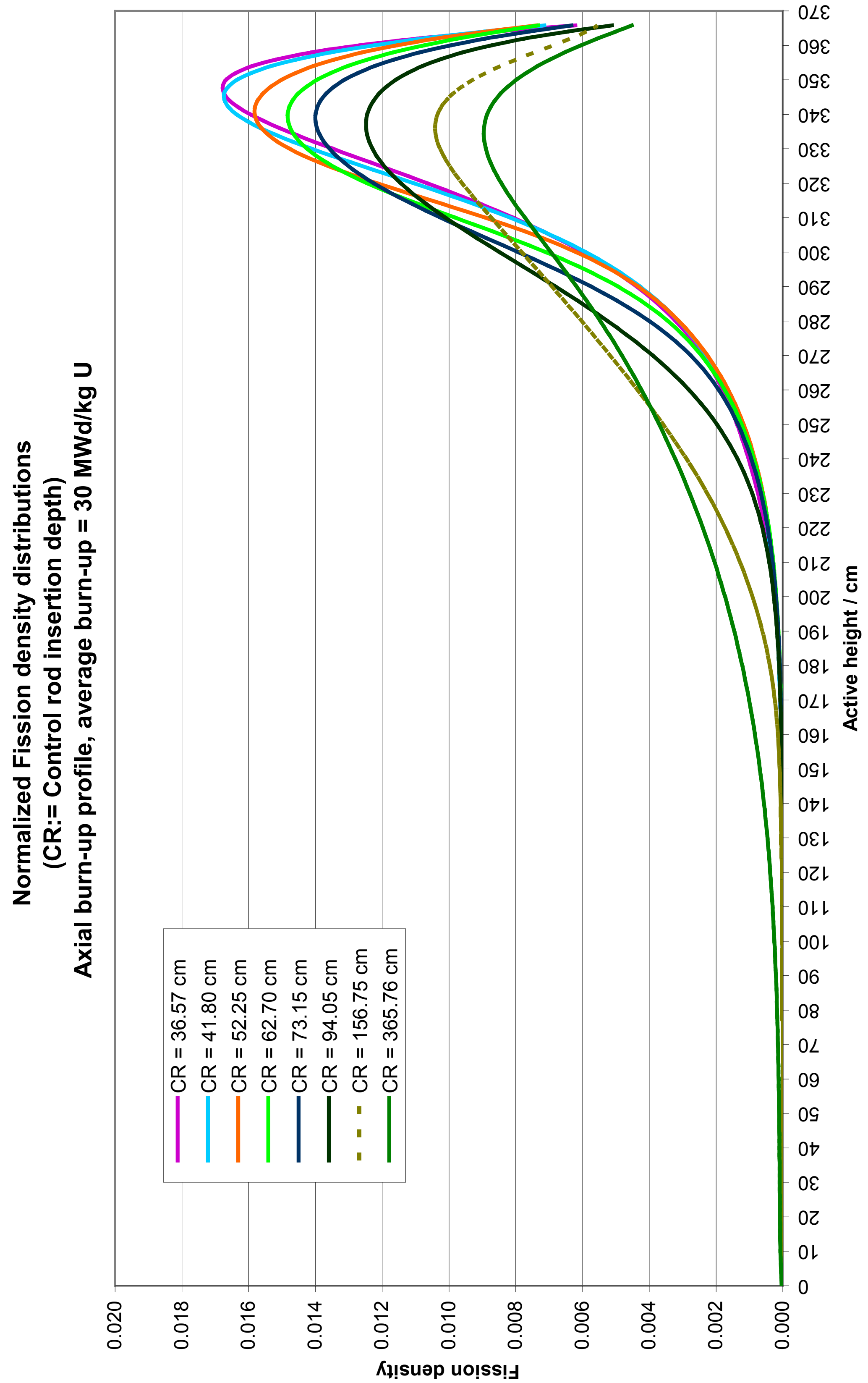


Figure 9.53: 50 MWd/kg U axial burn-up profile: Normalised axial fission density distributions for CR insertion depths 0 cm ≤ d_{CR} ≤ 26.12 cm

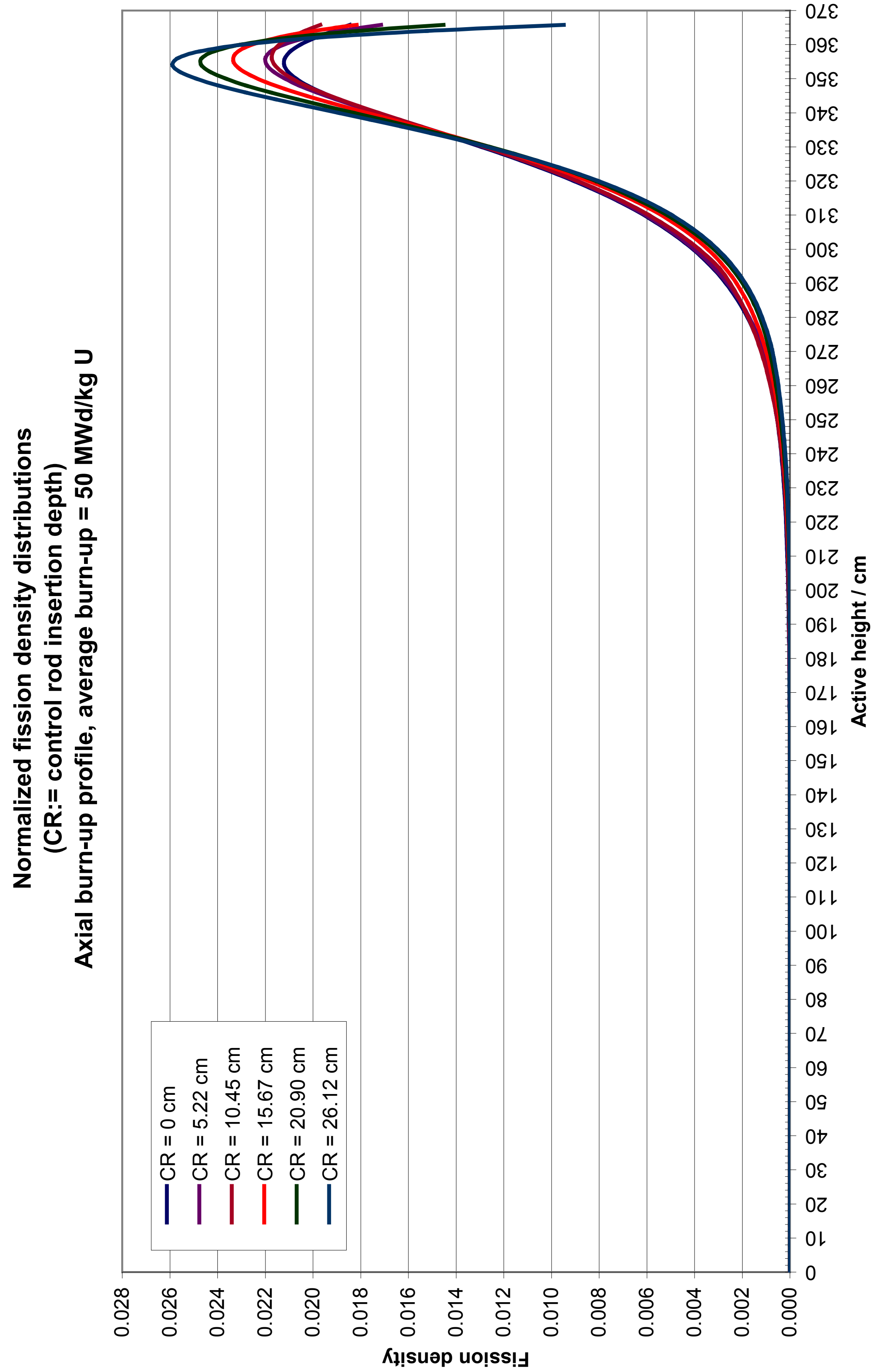


Figure 9.54: 50 MWd/kg U axial burn-up profile: Normalised axial fission density distributions for CR insertion depths 26.12 cm ≤ d_{CR} ≤ 365.76 cm

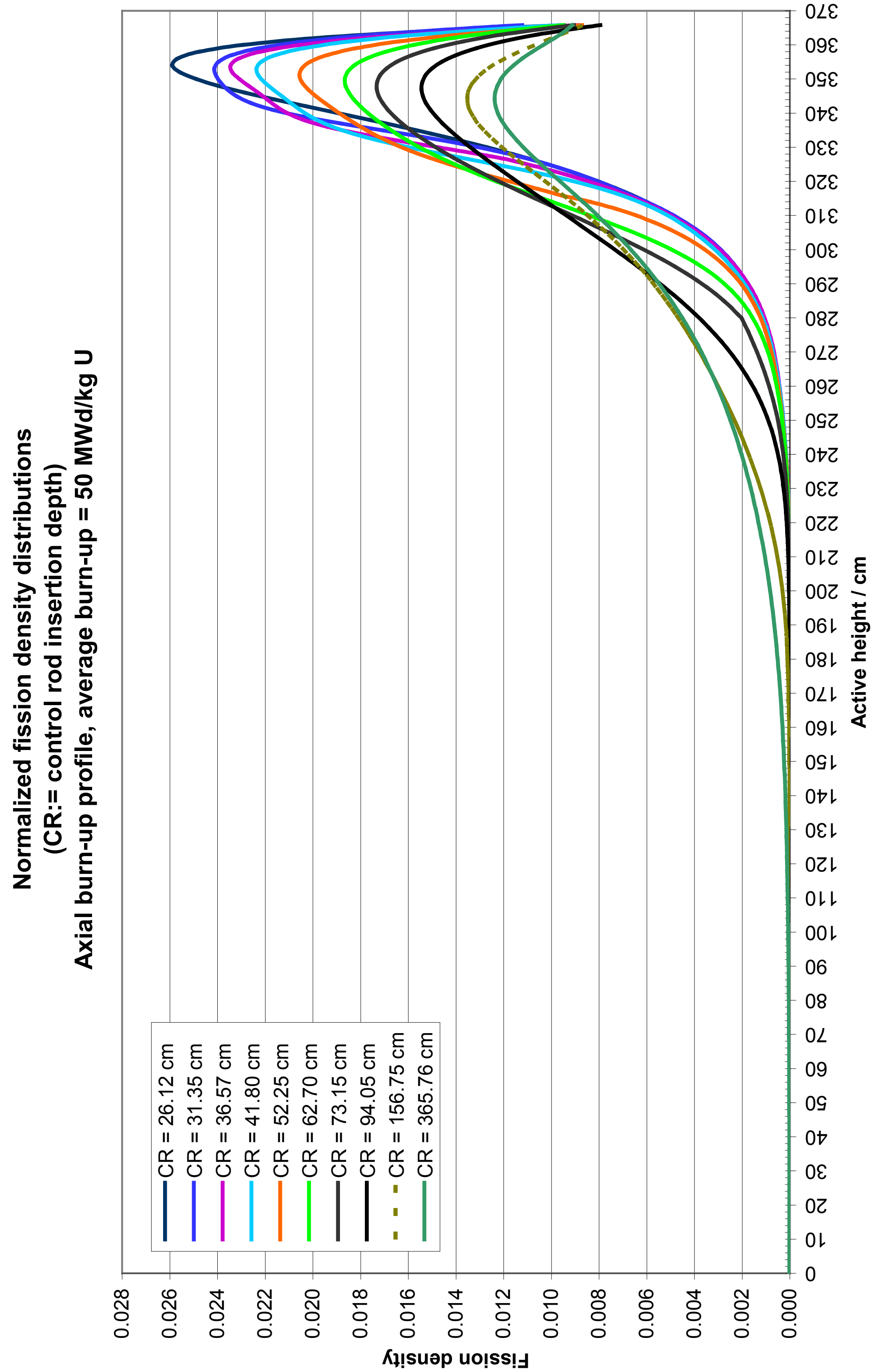


Figure 9.55: Top end fission probability content C7 as a function of the CR insertion depth d_{CR} (see Table 9.32)

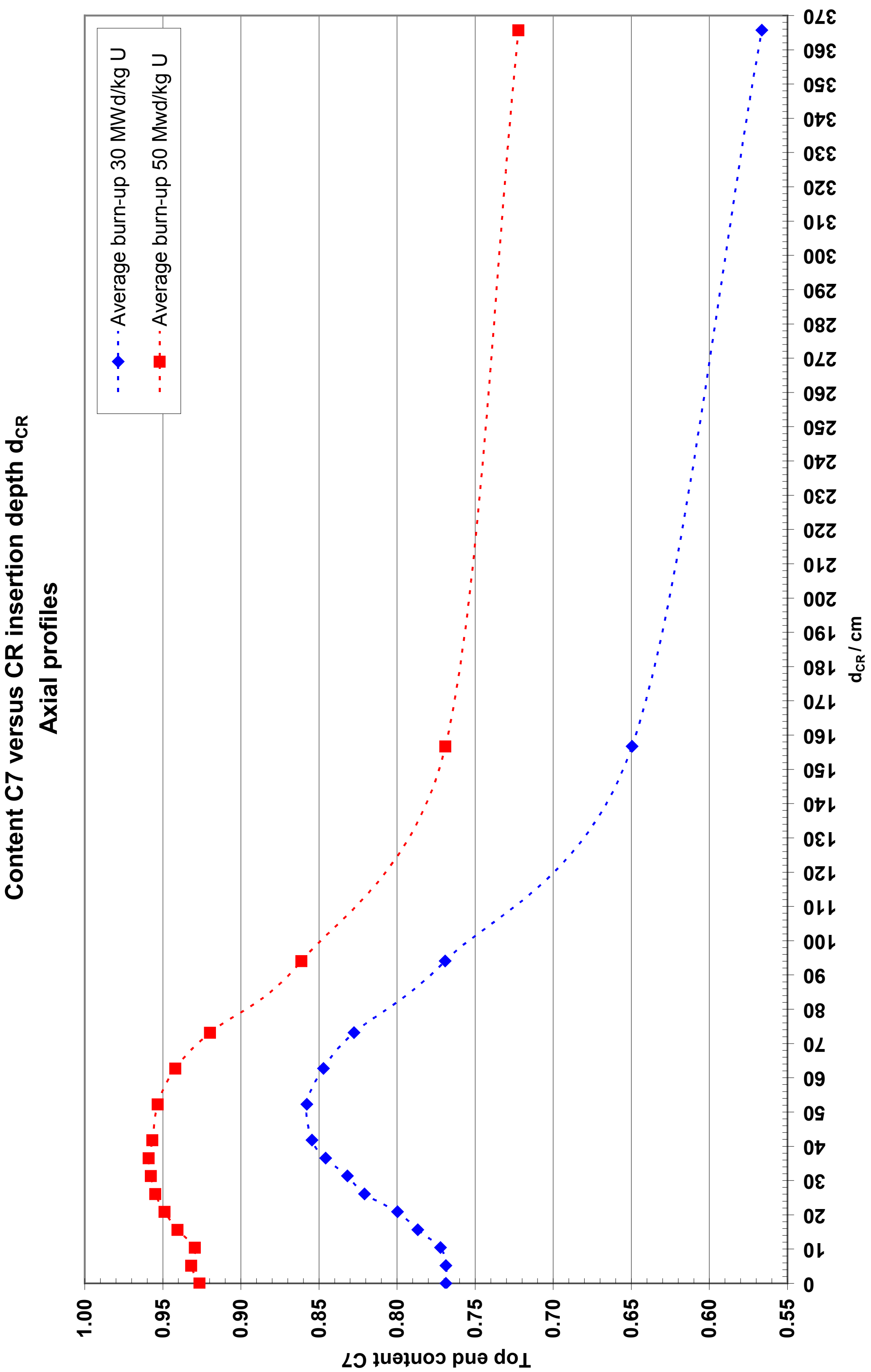


Figure 9.56: Increase of the 30 MWd/kg U axial burn-up profile's neutron multiplication factor as a function of d_{CR} versus the top end content C7 (see Tables 9.31 and 9.32)

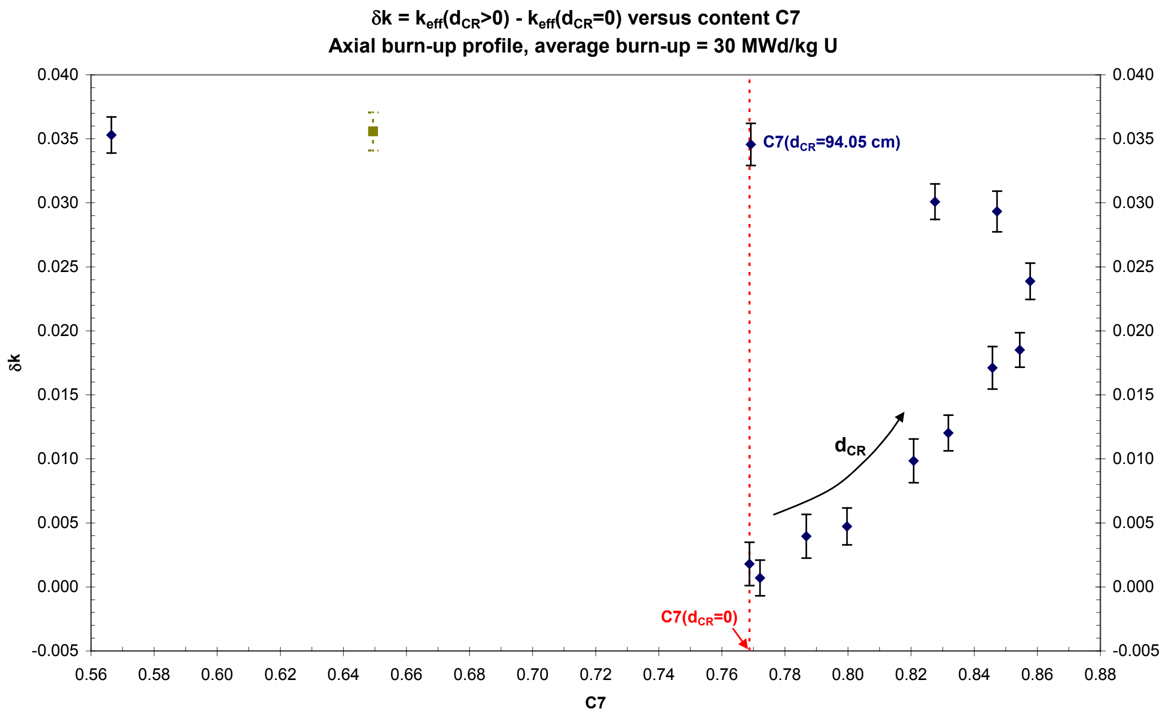


Figure 9.57: Increase of the 50 MWd/kg U axial burn-up profile's neutron multiplication factor as a function of d_{CR} versus the top end content C7 (see Tables 9.31 and 9.32)

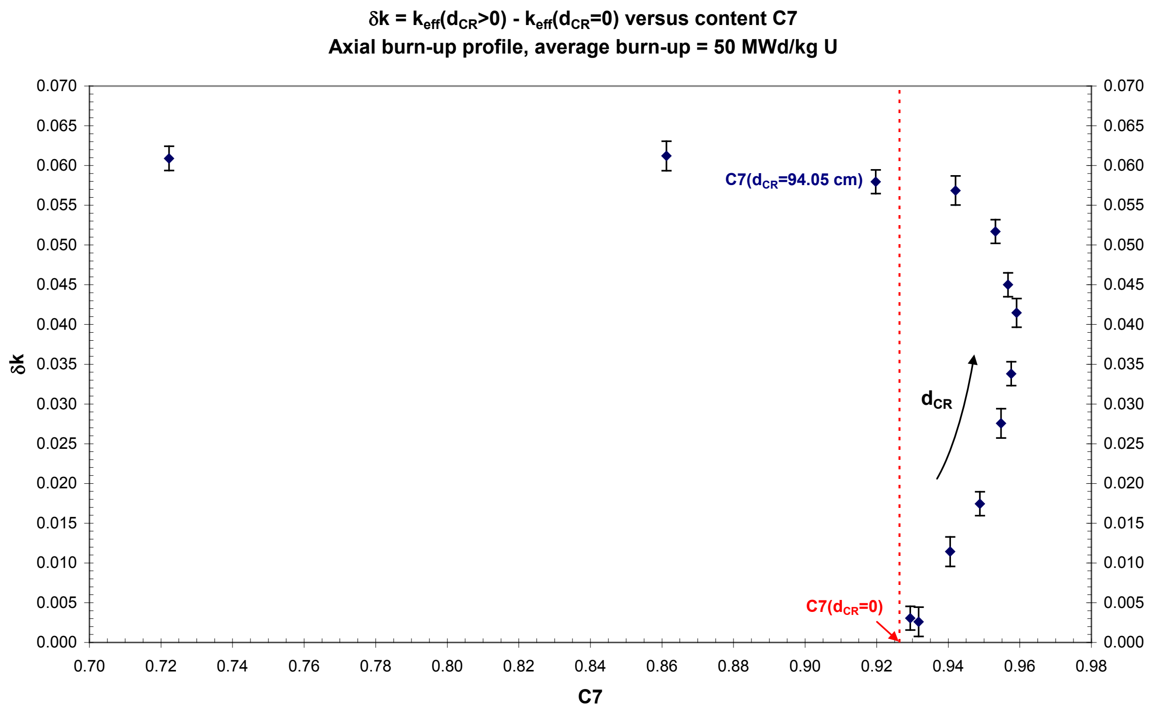


Figure 9.58: Phase II-C: Top end content C6 as a function of S6 + g*(S13/S6) for the 32 MWd/kg U axial burn-up profiles, [4], Appendix VI

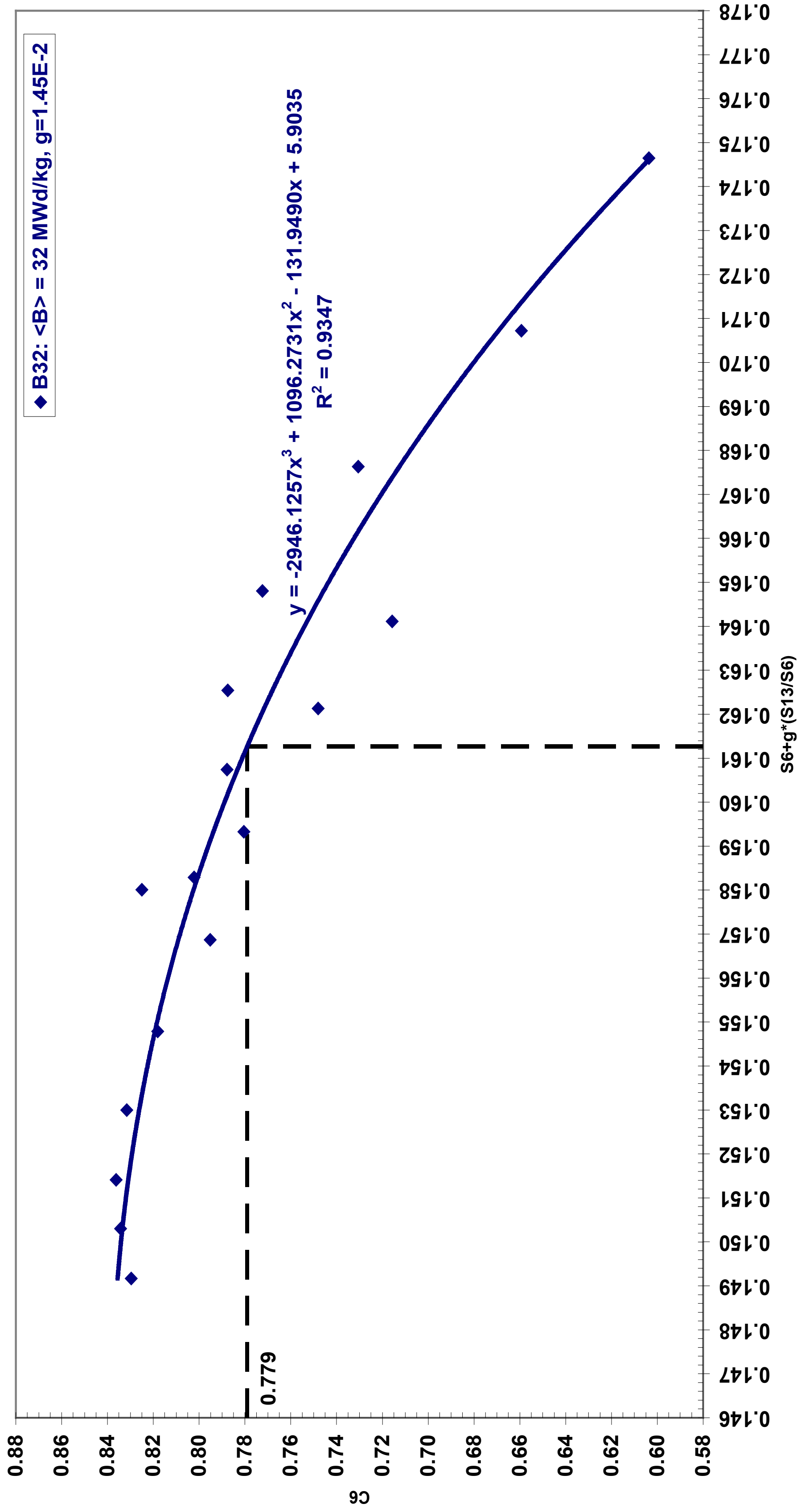


Figure 9.59: Phase II-C: Top end content C6 as a function of S6 + g*(S13/S6) for the 50 MWd/kg U axial burn-up profiles, [4], Appendix VI

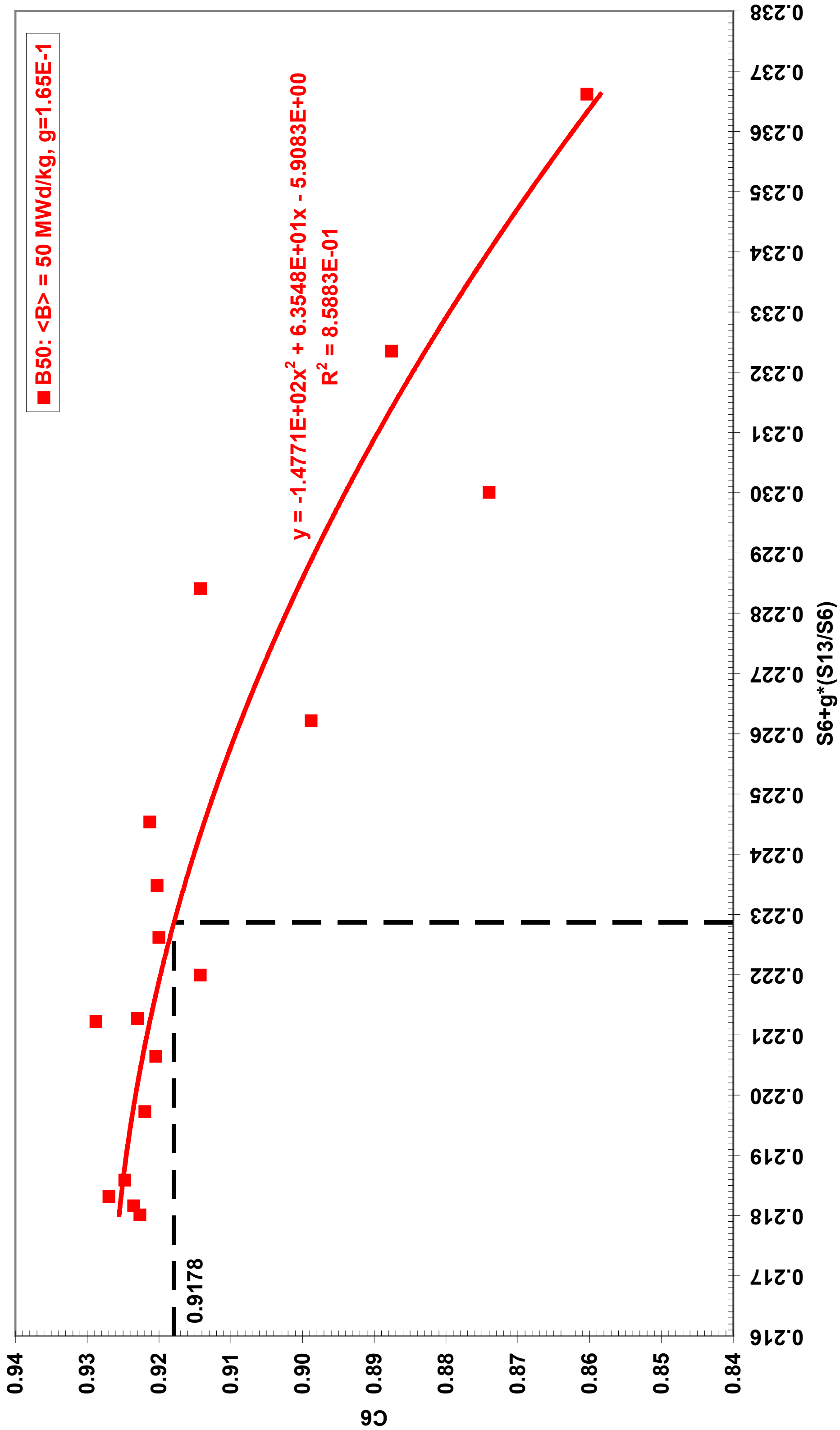


Figure 9.60: Phase II-C: End effect Δk as a function of the top end content C6 (Figure is based on Figure VI.34 of [4], Appendix VI; see also Figure 6.10 of the report on hand)

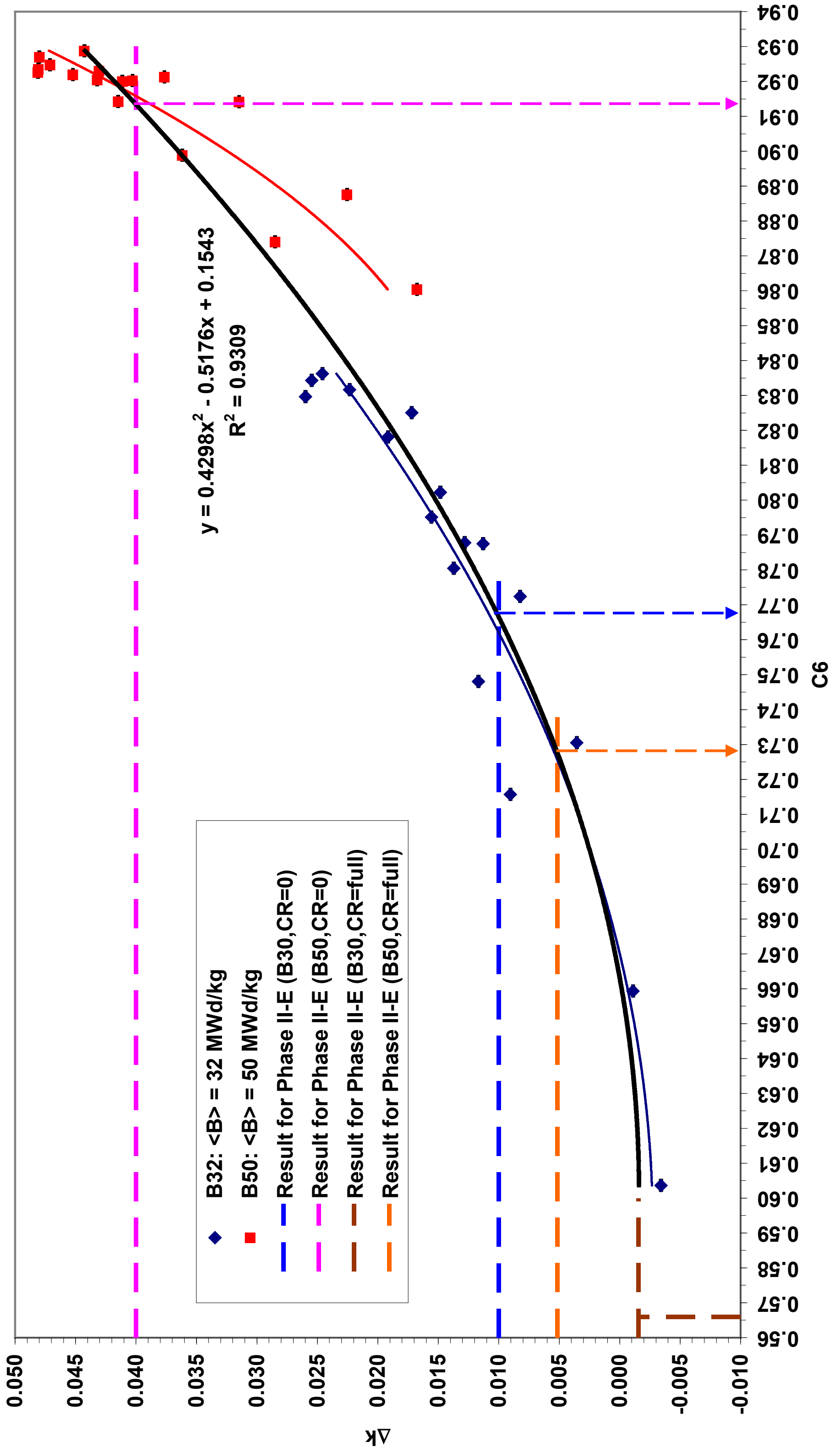


Figure 10.1: Results for the case that a section of the top end of the active fuel zone of fuel assemblies protrudes from the neutron absorber channels of a flooded PWR spent fuel storage or transport configuration, [18]: Neutron multiplication factors and end effect as a function of the non-coverage parameter ζ (see Figure 10.2)

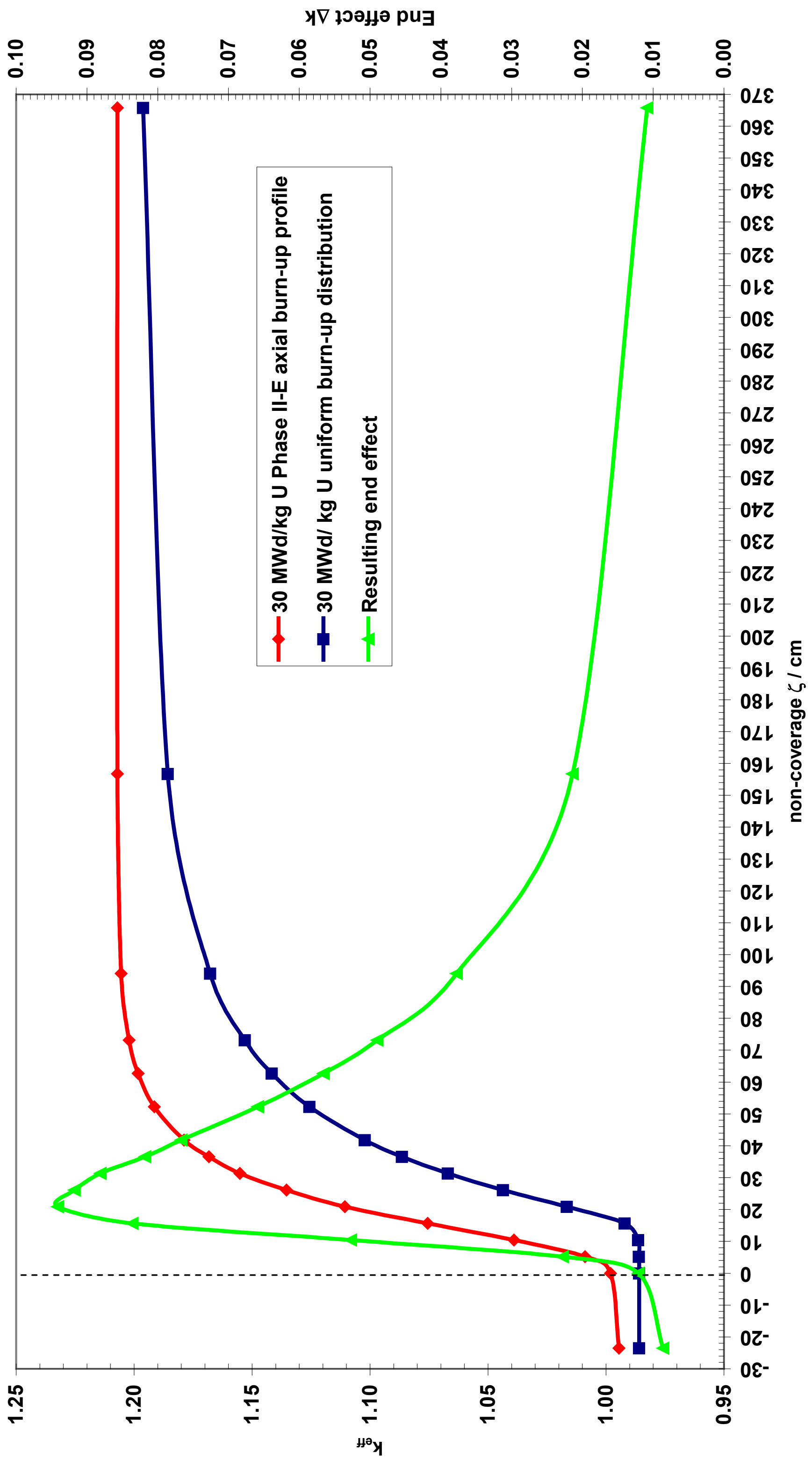
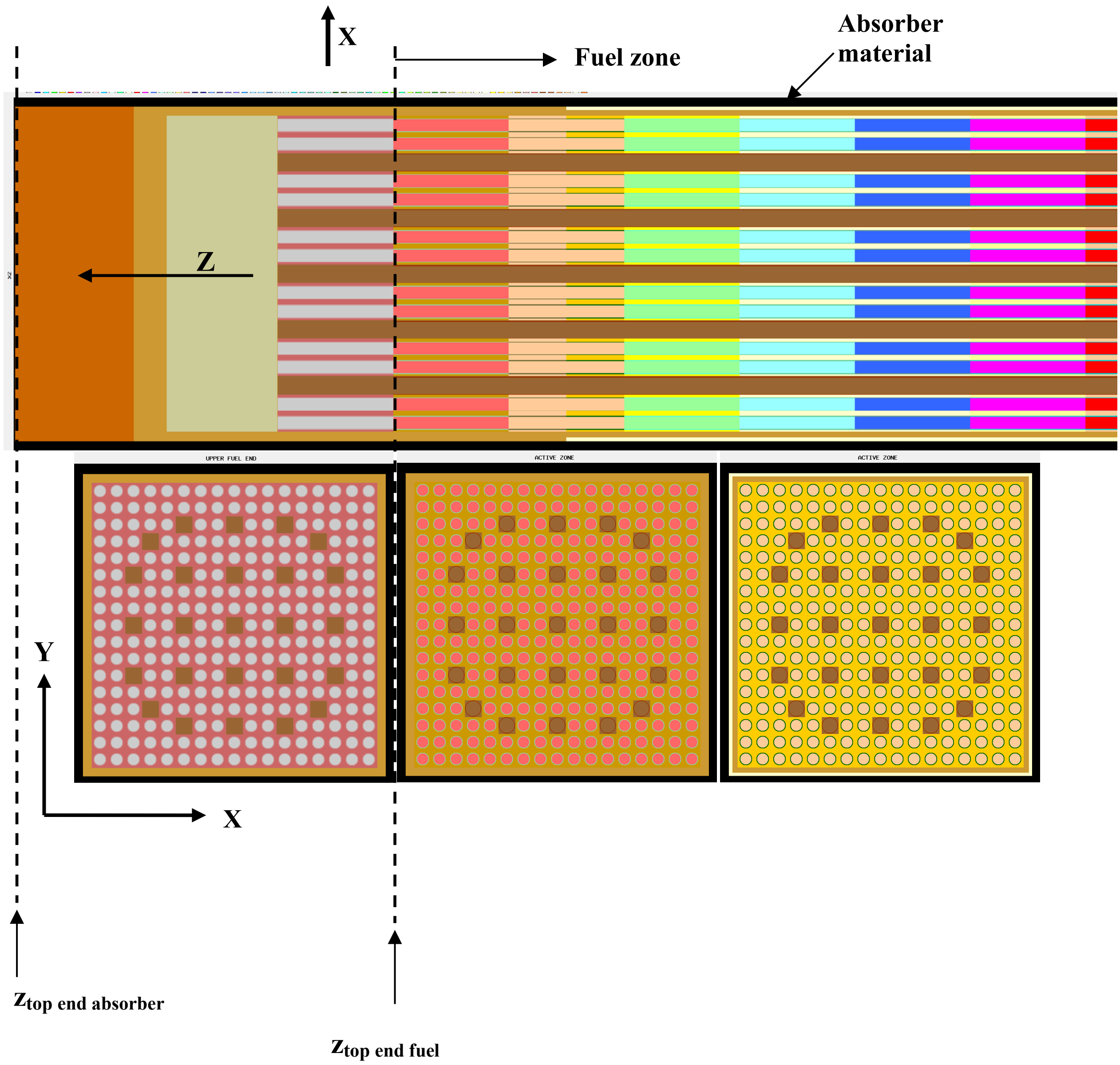


Figure 10.2: Illustration of the definition of the non-coverage parameter ζ used in Figure 10.1: $\zeta = z_{\text{top end fuel}} - z_{\text{top end absorber}}$

(ζ of the configuration shown here as an example is negative, see also Figure 10.1)



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Appendices

Appendix I

Structure of the isotopic inventory files "edxx_f01_idnnnnn_bmm.mip"

```
AXIMER Version 01 - J.C.Neuber                        17.05.2005  13:40:43
ED24_F01_id00522_B30.mip
íííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííí

lfd.Nr.:   1 aus sha_alf.mod



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 tc-99         1                  0.0  1.09863E-05  293.0  end
 ru-101        1                  0.0  9.76043E-06  293.0  end
 rh-103        1                  0.0  4.33782E-06  293.0  end
 ag-109        1                  0.0  2.96840E-07  293.0  end
 cs-133        1                  0.0  1.14667E-05  293.0  end
 nd-143        1                  0.0  9.00927E-06  293.0  end
 nd-145        1                  0.0  6.97408E-06  293.0  end
 sm-147        1                  0.0  2.19762E-07  293.0  end
 sm-149        1                  0.0  9.14633E-08  293.0  end
 sm-150        1                  0.0  2.03663E-06  293.0  end
 sm-151        1                  0.0  3.17012E-07  293.0  end
 sm-152        1                  0.0  1.00990E-06  293.0  end
 eu-153        1                  0.0  4.53614E-07  293.0  end
 gd-155        1                  0.0  2.04788E-10  293.0  end
 u-234         1                  0.0  7.22023E-06  293.0  end
 u-235         1                  0.0  7.38873E-04  293.0  end
 u-236         1                  0.0  3.73654E-05  293.0  end
 u-238         1                  0.0  2.19107E-02  293.0  end
 np-237        1                  0.0  1.05409E-06  293.0  end
 pu-238        1                  0.0  6.33352E-08  293.0  end
 pu-239        1                  0.0  6.66489E-05  293.0  end
 pu-240        1                  0.0  6.76284E-06  293.0  end
 pu-241        1                  0.0  2.13231E-06  293.0  end
 pu-242        1                  0.0  1.00259E-07  293.0  end
 am-241        1                  0.0  1.44253E-08  293.0  end
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 ru-101        2                  0.0  2.55954E-05  293.0  end
 rh-103        2                  0.0  1.36186E-05  293.0  end
 ag-109        2                  0.0  1.43798E-06  293.0  end
 cs-133        2                  0.0  2.91472E-05  293.0  end
 nd-143        2                  0.0  2.22842E-05  293.0  end
 nd-145        2                  0.0  1.70912E-05  293.0  end
 sm-147        2                  0.0  1.21594E-06  293.0  end
 sm-149        2                  0.0  1.04634E-07  293.0  end
```

Nuclide

Number density (in units of $b^{-1} \cdot cm^{-1}$)

Axial zone number (see Tables 4.2 through 4.15)

Files "edxx_f01_idnnnnn_bmm.mip"

File ed13_f01_id00000_b30.mip

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rh-103    1  0.0  4.33782E-06  293.0  end
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sm-150    1  0.0  2.03663E-06  293.0  end
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eu-153    1  0.0  4.53614E-07  293.0  end
gd-155    1  0.0  2.04788E-10  293.0  end
u-234     1  0.0  7.22023E-06  293.0  end
u-235     1  0.0  7.38873E-04  293.0  end
u-236     1  0.0  3.73654E-05  293.0  end
u-238     1  0.0  2.19107E-02  293.0  end
np-237    1  0.0  1.05409E-06  293.0  end
pu-238    1  0.0  6.33352E-08  293.0  end
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pu-242    1  0.0  1.00259E-07  293.0  end
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nd-143    2  0.0  2.22842E-05  293.0  end
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sm-152    1  0.0  1.93048E-06  293.0  end
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u-235     1  0.0  6.11882E-04  293.0  end
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cs-133    3  0.0  5.72281E-05  293.0  end
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nd-145    3  0.0  3.31608E-05  293.0  end
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sm-150    3  0.0  1.42273E-05  293.0  end
sm-151    3  0.0  5.94146E-07  293.0  end
sm-152    3  0.0  5.50897E-06  293.0  end
```

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gd-155   3  0.0  8.37506E-10  293.0  end
u-234    3  0.0  5.50475E-06  293.0  end
u-235    3  0.0  4.07826E-04  293.0  end
u-236    3  0.0  9.26287E-05  293.0  end
u-238    3  0.0  2.16368E-02  293.0  end
np-237   3  0.0  6.71084E-06  293.0  end
pu-238   3  0.0  1.44346E-06  293.0  end
pu-239   3  0.0  1.26732E-04  293.0  end
pu-240   3  0.0  3.40627E-05  293.0  end
pu-241   3  0.0  2.06501E-05  293.0  end
pu-242   3  0.0  4.23479E-06  293.0  end
am-241   3  0.0  4.48617E-07  293.0  end
am-243   3  0.0  5.14189E-07  293.0  end
o        3  0.0  4.58960E-02  293.0  end
mo-95    4  0.0  3.66247E-05  293.0  end
tc-99    4  0.0  4.27056E-05  293.0  end
ru-101   4  0.0  4.06791E-05  293.0  end
rh-103   4  0.0  2.14951E-05  293.0  end
ag-109   4  0.0  2.95753E-06  293.0  end
cs-133   4  0.0  4.41455E-05  293.0  end
nd-143   4  0.0  3.16872E-05  293.0  end
nd-145   4  0.0  2.56340E-05  293.0  end
sm-147   4  0.0  2.34093E-06  293.0  end
sm-149   4  0.0  1.03755E-07  293.0  end
sm-150   4  0.0  1.01928E-05  293.0  end
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sm-152   4  0.0  4.25742E-06  293.0  end
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gd-155   4  0.0  1.19767E-09  293.0  end
u-234    4  0.0  4.99050E-06  293.0  end
u-235    4  0.0  3.27069E-04  293.0  end
u-236    4  0.0  1.04426E-04  293.0  end
u-238    4  0.0  2.15373E-02  293.0  end
np-237   4  0.0  8.98879E-06  293.0  end
pu-238   4  0.0  2.45348E-06  293.0  end
pu-239   4  0.0  1.32347E-04  293.0  end
pu-240   4  0.0  4.20805E-05  293.0  end
pu-241   4  0.0  2.64677E-05  293.0  end
pu-242   4  0.0  7.18613E-06  293.0  end
am-241   4  0.0  6.68443E-07  293.0  end
am-243   4  0.0  1.08205E-06  293.0  end
o        4  0.0  4.58960E-02  293.0  end
mo-95    5  0.0  3.87783E-05  293.0  end
tc-99    5  0.0  4.47706E-05  293.0  end
ru-101   5  0.0  4.28954E-05  293.0  end
rh-103   5  0.0  2.25436E-05  293.0  end
ag-109   5  0.0  3.20316E-06  293.0  end
cs-133   5  0.0  4.61945E-05  293.0  end
nd-143   5  0.0  3.28074E-05  293.0  end
nd-145   5  0.0  2.68052E-05  293.0  end
sm-147   5  0.0  2.49741E-06  293.0  end
sm-149   5  0.0  1.02987E-07  293.0  end
sm-150   5  0.0  1.07987E-05  293.0  end
sm-151   5  0.0  5.39957E-07  293.0  end
sm-152   5  0.0  4.45337E-06  293.0  end
eu-153   5  0.0  4.07942E-06  293.0  end
gd-155   5  0.0  1.31625E-09  293.0  end
u-234    5  0.0  4.84439E-06  293.0  end
u-235    5  0.0  3.05613E-04  293.0  end
u-236    5  0.0  1.07369E-04  293.0  end
u-238    5  0.0  2.15068E-02  293.0  end
np-237   5  0.0  9.66112E-06  293.0  end
pu-238   5  0.0  2.80716E-06  293.0  end
pu-239   5  0.0  1.33299E-04  293.0  end
pu-240   5  0.0  4.42526E-05  293.0  end
pu-241   5  0.0  2.79931E-05  293.0  end
pu-242   5  0.0  8.19047E-06  293.0  end
am-241   5  0.0  7.31520E-07  293.0  end
am-243   5  0.0  1.29979E-06  293.0  end
o        5  0.0  4.58960E-02  293.0  end
mo-95    6  0.0  3.99245E-05  293.0  end
tc-99    6  0.0  4.58684E-05  293.0  end
ru-101   6  0.0  4.40871E-05  293.0  end
rh-103   6  0.0  2.30946E-05  293.0  end
ag-109   6  0.0  3.33693E-06  293.0  end
cs-133   6  0.0  4.72788E-05  293.0  end
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eu-153   3  0.0  5.85408E-06  293.0  end
gd-155   3  0.0  2.10197E-09  293.0  end
u-234    3  0.0  4.03888E-06  293.0  end
u-235    3  0.0  1.99381E-04  293.0  end
u-236    3  0.0  1.20224E-04  293.0  end
u-238    3  0.0  2.13218E-02  293.0  end
np-237   3  0.0  1.34780E-05  293.0  end
pu-238   3  0.0  5.34761E-06  293.0  end
pu-239   3  0.0  1.34721E-04  293.0  end
pu-240   3  0.0  5.50798E-05  293.0  end
pu-241   3  0.0  3.50511E-05  293.0  end
pu-242   3  0.0  1.51762E-05  293.0  end
am-241   3  0.0  1.04439E-06  293.0  end
am-243   3  0.0  2.99423E-06  293.0  end
o        3  0.0  4.58960E-02  293.0  end
mo-95    4  0.0  5.96712E-05  293.0  end
tc-99    4  0.0  6.46007E-05  293.0  end
ru-101   4  0.0  6.60785E-05  293.0  end
rh-103   4  0.0  3.15433E-05  293.0  end
ag-109   4  0.0  5.93158E-06  293.0  end
cs-133   4  0.0  6.50896E-05  293.0  end
nd-143   4  0.0  4.05165E-05  293.0  end
nd-145   4  0.0  3.77725E-05  293.0  end
sm-147   4  0.0  3.77541E-06  293.0  end
sm-149   4  0.0  9.15997E-08  293.0  end
sm-150   4  0.0  1.68313E-05  293.0  end
sm-151   4  0.0  6.31352E-07  293.0  end
sm-152   4  0.0  6.26848E-06  293.0  end
eu-153   4  0.0  7.27784E-06  293.0  end
gd-155   4  0.0  2.85189E-09  293.0  end
u-234    4  0.0  3.44279E-06  293.0  end
u-235    4  0.0  1.34474E-04  293.0  end
u-236    4  0.0  1.25700E-04  293.0  end
u-238    4  0.0  2.11573E-02  293.0  end
np-237   4  0.0  1.62253E-05  293.0  end
pu-238   4  0.0  7.90604E-06  293.0  end
pu-239   4  0.0  1.32944E-04  293.0  end
pu-240   4  0.0  6.14878E-05  293.0  end
pu-241   4  0.0  3.86683E-05  293.0  end
pu-242   4  0.0  2.20178E-05  293.0  end
am-241   4  0.0  1.20020E-06  293.0  end
am-243   4  0.0  4.89767E-06  293.0  end
o        4  0.0  4.58960E-02  293.0  end
mo-95    5  0.0  6.23557E-05  293.0  end
tc-99    5  0.0  6.71035E-05  293.0  end
ru-101   5  0.0  6.93149E-05  293.0  end
rh-103   5  0.0  3.24996E-05  293.0  end
ag-109   5  0.0  6.31933E-06  293.0  end
cs-133   5  0.0  6.73489E-05  293.0  end
nd-143   5  0.0  4.10339E-05  293.0  end
nd-145   5  0.0  3.91194E-05  293.0  end
sm-147   5  0.0  3.89147E-06  293.0  end
sm-149   5  0.0  8.98022E-08  293.0  end
sm-150   5  0.0  1.76014E-05  293.0  end
sm-151   5  0.0  6.41671E-07  293.0  end
sm-152   5  0.0  6.49009E-06  293.0  end
eu-153   5  0.0  7.70931E-06  293.0  end
gd-155   5  0.0  3.09657E-09  293.0  end
u-234    5  0.0  3.26786E-06  293.0  end
u-235    5  0.0  1.17748E-04  293.0  end
u-236    5  0.0  1.26596E-04  293.0  end
u-238    5  0.0  2.11030E-02  293.0  end
np-237   5  0.0  1.70381E-05  293.0  end
pu-238   5  0.0  8.76042E-06  293.0  end
pu-239   5  0.0  1.32133E-04  293.0  end
pu-240   5  0.0  6.30944E-05  293.0  end
pu-241   5  0.0  3.94419E-05  293.0  end
pu-242   5  0.0  2.43086E-05  293.0  end
am-241   5  0.0  1.22961E-06  293.0  end
am-243   5  0.0  5.58383E-06  293.0  end
o        5  0.0  4.58960E-02  293.0  end
mo-95    6  0.0  6.36571E-05  293.0  end
tc-99    6  0.0  6.83111E-05  293.0  end
ru-101   6  0.0  7.09080E-05  293.0  end
rh-103   6  0.0  3.29433E-05  293.0  end
ag-109   6  0.0  6.50953E-06  293.0  end
cs-133   6  0.0  6.84264E-05  293.0  end
```

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nd-143    6  0.0  3.33814E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end
sm-147    7  0.0  2.60653E-06  293.0  end
sm-149    7  0.0  1.02369E-07  293.0  end
sm-150    7  0.0  1.12305E-05  293.0  end
sm-151    7  0.0  5.47362E-07  293.0  end
sm-152    7  0.0  4.59108E-06  293.0  end
eu-153    7  0.0  4.29579E-06  293.0  end
gd-155    7  0.0  1.40447E-09  293.0  end
u-234     7  0.0  4.74102E-06  293.0  end
u-235     7  0.0  2.90831E-04  293.0  end
u-236     7  0.0  1.09344E-04  293.0  end
u-238     7  0.0  2.14850E-02  293.0  end
np-237    7  0.0  1.01420E-05  293.0  end
pu-238    7  0.0  3.07627E-06  293.0  end
pu-239    7  0.0  1.33828E-04  293.0  end
pu-240    7  0.0  4.57545E-05  293.0  end
pu-241    7  0.0  2.90311E-05  293.0  end
pu-242    7  0.0  8.94661E-06  293.0  end
am-241    7  0.0  7.75585E-07  293.0  end
am-243    7  0.0  1.47055E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  3.95792E-05  293.0  end
tc-99     8  0.0  4.55378E-05  293.0  end
ru-101    8  0.0  4.37271E-05  293.0  end
rh-103    8  0.0  2.29293E-05  293.0  end
ag-109    8  0.0  3.29641E-06  293.0  end
cs-133    8  0.0  4.69526E-05  293.0  end
nd-143    8  0.0  3.32102E-05  293.0  end
nd-145    8  0.0  2.72393E-05  293.0  end
sm-147    8  0.0  2.55497E-06  293.0  end
sm-149    8  0.0  1.02671E-07  293.0  end
sm-150    8  0.0  1.10254E-05  293.0  end
sm-151    8  0.0  5.43866E-07  293.0  end
sm-152    8  0.0  4.52584E-06  293.0  end
eu-153    8  0.0  4.19271E-06  293.0  end
gd-155    8  0.0  1.36216E-09  293.0  end
u-234     8  0.0  4.79005E-06  293.0  end
u-235     8  0.0  2.97803E-04  293.0  end
u-236     8  0.0  1.08419E-04  293.0  end
u-238     8  0.0  2.14952E-02  293.0  end
np-237    8  0.0  9.91337E-06  293.0  end
pu-238    8  0.0  2.94667E-06  293.0  end
pu-239    8  0.0  1.33592E-04  293.0  end
pu-240    8  0.0  4.50459E-05  293.0  end
pu-241    8  0.0  2.85432E-05  293.0  end
pu-242    8  0.0  8.58315E-06  293.0  end
am-241    8  0.0  7.54760E-07  293.0  end
am-243    8  0.0  1.38782E-06  293.0  end
```

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nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  4.00320E-05  293.0  end
sm-147    7  0.0  3.96292E-06  293.0  end
sm-149    7  0.0  8.86158E-08  293.0  end
sm-150    7  0.0  1.81246E-05  293.0  end
sm-151    7  0.0  6.48610E-07  293.0  end
sm-152    7  0.0  6.64004E-06  293.0  end
eu-153    7  0.0  8.00504E-06  293.0  end
gd-155    7  0.0  3.27190E-09  293.0  end
u-234     7  0.0  3.14936E-06  293.0  end
u-235     7  0.0  1.07033E-04  293.0  end
u-236     7  0.0  1.27003E-04  293.0  end
u-238     7  0.0  2.10638E-02  293.0  end
np-237    7  0.0  1.75686E-05  293.0  end
pu-238    7  0.0  9.36658E-06  293.0  end
pu-239    7  0.0  1.31543E-04  293.0  end
pu-240    7  0.0  6.41029E-05  293.0  end
pu-241    7  0.0  3.98988E-05  293.0  end
pu-242    7  0.0  2.59358E-05  293.0  end
am-241    7  0.0  1.24514E-06  293.0  end
am-243    7  0.0  6.08700E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  6.35416E-05  293.0  end
tc-99     8  0.0  6.82041E-05  293.0  end
ru-101    8  0.0  7.07660E-05  293.0  end
rh-103    8  0.0  3.29044E-05  293.0  end
ag-109    8  0.0  6.49260E-06  293.0  end
cs-133    8  0.0  6.83313E-05  293.0  end
nd-143    8  0.0  4.12258E-05  293.0  end
nd-145    8  0.0  3.97090E-05  293.0  end
sm-147    8  0.0  3.93831E-06  293.0  end
sm-149    8  0.0  8.90389E-08  293.0  end
sm-150    8  0.0  1.79393E-05  293.0  end
sm-151    8  0.0  6.46165E-07  293.0  end
sm-152    8  0.0  6.58693E-06  293.0  end
eu-153    8  0.0  7.90004E-06  293.0  end
gd-155    8  0.0  3.20910E-09  293.0  end
u-234     8  0.0  3.19131E-06  293.0  end
u-235     8  0.0  1.10770E-04  293.0  end
u-236     8  0.0  1.26880E-04  293.0  end
u-238     8  0.0  2.10779E-02  293.0  end
np-237    8  0.0  1.73813E-05  293.0  end
pu-238    8  0.0  9.14952E-06  293.0  end
pu-239    8  0.0  1.31758E-04  293.0  end
pu-240    8  0.0  6.37523E-05  293.0  end
pu-241    8  0.0  3.97436E-05  293.0  end
pu-242    8  0.0  2.53525E-05  293.0  end
am-241    8  0.0  1.24005E-06  293.0  end
am-243    8  0.0  5.90529E-06  293.0  end
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o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  3.85161E-05  293.0  end
tc-99     9  0.0  4.45193E-05  293.0  end
ru-101    9  0.0  4.26241E-05  293.0  end
rh-103    9  0.0  2.24167E-05  293.0  end
ag-109    9  0.0  3.17286E-06  293.0  end
cs-133    9  0.0  4.59459E-05  293.0  end
nd-143    9  0.0  3.26739E-05  293.0  end
nd-145    9  0.0  2.66628E-05  293.0  end
sm-147    9  0.0  2.47847E-06  293.0  end
sm-149    9  0.0  1.03087E-07  293.0  end
sm-150    9  0.0  1.07246E-05  293.0  end
sm-151    9  0.0  5.38669E-07  293.0  end
sm-152    9  0.0  4.42961E-06  293.0  end
eu-153    9  0.0  4.04254E-06  293.0  end
gd-155    9  0.0  1.30144E-09  293.0  end
u-234     9  0.0  4.86219E-06  293.0  end
u-235     9  0.0  3.08189E-04  293.0  end
u-236     9  0.0  1.07020E-04  293.0  end
u-238     9  0.0  2.15106E-02  293.0  end
np-237    9  0.0  9.57877E-06  293.0  end
pu-238    9  0.0  2.76242E-06  293.0  end
pu-239    9  0.0  1.33196E-04  293.0  end
pu-240    9  0.0  4.39911E-05  293.0  end
pu-241    9  0.0  2.78109E-05  293.0  end
pu-242    9  0.0  8.06416E-06  293.0  end
am-241    9  0.0  7.23880E-07  293.0  end
am-243    9  0.0  1.27181E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  3.77225E-05  293.0  end
tc-99    10  0.0  4.37585E-05  293.0  end
ru-101   10  0.0  4.18054E-05  293.0  end
rh-103   10  0.0  2.20313E-05  293.0  end
ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
u-235    11  0.0  3.22255E-04  293.0  end
u-236    11  0.0  1.05095E-04  293.0  end
u-238    11  0.0  2.15307E-02  293.0  end
np-237   11  0.0  9.13701E-06  293.0  end
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o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  6.25017E-05  293.0  end
tc-99     9  0.0  6.72392E-05  293.0  end
ru-101    9  0.0  6.94929E-05  293.0  end
rh-103    9  0.0  3.25501E-05  293.0  end
ag-109    9  0.0  6.34060E-06  293.0  end
cs-133    9  0.0  6.74704E-05  293.0  end
nd-143    9  0.0  4.10587E-05  293.0  end
nd-145    9  0.0  3.91922E-05  293.0  end
sm-147    9  0.0  3.89739E-06  293.0  end
sm-149    9  0.0  8.97077E-08  293.0  end
sm-150    9  0.0  1.76431E-05  293.0  end
sm-151    9  0.0  6.42227E-07  293.0  end
sm-152    9  0.0  6.50205E-06  293.0  end
eu-153    9  0.0  7.73280E-06  293.0  end
gd-155    9  0.0  3.11030E-09  293.0  end
u-234     9  0.0  3.25841E-06  293.0  end
u-235     9  0.0  1.16875E-04  293.0  end
u-236     9  0.0  1.26635E-04  293.0  end
u-238     9  0.0  2.10999E-02  293.0  end
np-237    9  0.0  1.70808E-05  293.0  end
pu-238    9  0.0  8.80797E-06  293.0  end
pu-239    9  0.0  1.32088E-04  293.0  end
pu-240    9  0.0  6.31770E-05  293.0  end
pu-241    9  0.0  3.94804E-05  293.0  end
pu-242    9  0.0  2.44361E-05  293.0  end
am-241    9  0.0  1.23098E-06  293.0  end
am-243    9  0.0  5.62282E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  6.17218E-05  293.0  end
tc-99    10  0.0  6.65140E-05  293.0  end
ru-101   10  0.0  6.85447E-05  293.0  end
rh-103   10  0.0  3.22787E-05  293.0  end
ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
u-235    11  0.0  1.24735E-04  293.0  end
u-236    11  0.0  1.26254E-04  293.0  end
u-238    11  0.0  2.11266E-02  293.0  end
np-237   11  0.0  1.66955E-05  293.0  end
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pu-238   11  0.0  2.52920E-06  293.0  end
pu-239   11  0.0  1.32580E-04  293.0  end
pu-240   11  0.0  4.25667E-05  293.0  end
pu-241   11  0.0  2.68115E-05  293.0  end
pu-242   11  0.0  7.40231E-06  293.0  end
am-241   11  0.0  6.82477E-07  293.0  end
am-243   11  0.0  1.12799E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  3.63734E-05  293.0  end
tc-99    12  0.0  4.24647E-05  293.0  end
ru-101   12  0.0  4.04227E-05  293.0  end
rh-103   12  0.0  2.13720E-05  293.0  end
ag-109   12  0.0  2.92939E-06  293.0  end
cs-133   12  0.0  4.39058E-05  293.0  end
nd-143   12  0.0  3.15532E-05  293.0  end
nd-145   12  0.0  2.54971E-05  293.0  end
sm-147   12  0.0  2.32256E-06  293.0  end
sm-149   12  0.0  1.03836E-07  293.0  end
sm-150   12  0.0  1.01227E-05  293.0  end
sm-151   12  0.0  5.27971E-07  293.0  end
sm-152   12  0.0  4.23447E-06  293.0  end
eu-153   12  0.0  3.74564E-06  293.0  end
gd-155   12  0.0  1.18433E-09  293.0  end
u-234    12  0.0  5.00751E-06  293.0  end
u-235    12  0.0  3.29615E-04  293.0  end
u-236    12  0.0  1.04069E-04  293.0  end
u-238    12  0.0  2.15407E-02  293.0  end
np-237   12  0.0  8.91104E-06  293.0  end
pu-238   12  0.0  2.41426E-06  293.0  end
pu-239   12  0.0  1.32218E-04  293.0  end
pu-240   12  0.0  4.18236E-05  293.0  end
pu-241   12  0.0  2.62856E-05  293.0  end
pu-242   12  0.0  7.07391E-06  293.0  end
am-241   12  0.0  6.61056E-07  293.0  end
am-243   12  0.0  1.05840E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  3.56166E-05  293.0  end
tc-99    13  0.0  4.17389E-05  293.0  end
ru-101   13  0.0  3.96526E-05  293.0  end
rh-103   13  0.0  2.09998E-05  293.0  end
ag-109   13  0.0  2.84526E-06  293.0  end
cs-133   13  0.0  4.31827E-05  293.0  end
nd-143   13  0.0  3.11452E-05  293.0  end
nd-145   13  0.0  2.50844E-05  293.0  end
sm-147   13  0.0  2.26709E-06  293.0  end
sm-149   13  0.0  1.04070E-07  293.0  end
sm-150   13  0.0  9.91201E-06  293.0  end
sm-151   13  0.0  5.24130E-07  293.0  end
sm-152   13  0.0  4.16521E-06  293.0  end
eu-153   13  0.0  3.64271E-06  293.0  end
gd-155   13  0.0  1.14474E-09  293.0  end
u-234    13  0.0  5.05879E-06  293.0  end
u-235    13  0.0  3.37337E-04  293.0  end
u-236    13  0.0  1.02977E-04  293.0  end
u-238    13  0.0  2.15511E-02  293.0  end
np-237   13  0.0  8.67768E-06  293.0  end
pu-238   13  0.0  2.29860E-06  293.0  end
pu-239   13  0.0  1.31808E-04  293.0  end
pu-240   13  0.0  4.10458E-05  293.0  end
pu-241   13  0.0  2.57321E-05  293.0  end
pu-242   13  0.0  6.74198E-06  293.0  end
am-241   13  0.0  6.38790E-07  293.0  end
am-243   13  0.0  9.89299E-07  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  3.44576E-05  293.0  end
tc-99    14  0.0  4.06272E-05  293.0  end
ru-101   14  0.0  3.84781E-05  293.0  end
rh-103   14  0.0  2.04246E-05  293.0  end
ag-109   14  0.0  2.71820E-06  293.0  end
cs-133   14  0.0  4.20714E-05  293.0  end
nd-143   14  0.0  3.05087E-05  293.0  end
nd-145   14  0.0  2.44504E-05  293.0  end
sm-147   14  0.0  2.18173E-06  293.0  end
sm-149   14  0.0  1.04399E-07  293.0  end
sm-150   14  0.0  9.59030E-06  293.0  end
sm-151   14  0.0  5.18167E-07  293.0  end
sm-152   14  0.0  4.05863E-06  293.0  end
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pu-238   11  0.0  8.39082E-06  293.0  end
pu-239   11  0.0  1.32485E-04  293.0  end
pu-240   11  0.0  6.24273E-05  293.0  end
pu-241   11  0.0  3.91285E-05  293.0  end
pu-242   11  0.0  2.33174E-05  293.0  end
am-241   11  0.0  1.21804E-06  293.0  end
am-243   11  0.0  5.28382E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  6.05774E-05  293.0  end
tc-99    12  0.0  6.54472E-05  293.0  end
ru-101   12  0.0  6.71636E-05  293.0  end
rh-103   12  0.0  3.18720E-05  293.0  end
ag-109   12  0.0  6.06172E-06  293.0  end
cs-133   12  0.0  6.58576E-05  293.0  end
nd-143   12  0.0  4.07041E-05  293.0  end
nd-145   12  0.0  3.82289E-05  293.0  end
sm-147   12  0.0  3.81610E-06  293.0  end
sm-149   12  0.0  9.10122E-08  293.0  end
sm-150   12  0.0  1.70919E-05  293.0  end
sm-151   12  0.0  6.34925E-07  293.0  end
sm-152   12  0.0  6.34352E-06  293.0  end
eu-153   12  0.0  7.42345E-06  293.0  end
gd-155   12  0.0  2.93373E-09  293.0  end
u-234    12  0.0  3.38349E-06  293.0  end
u-235    12  0.0  1.28685E-04  293.0  end
u-236    12  0.0  1.26040E-04  293.0  end
u-238    12  0.0  2.11393E-02  293.0  end
np-237   12  0.0  1.65004E-05  293.0  end
pu-238   12  0.0  8.19019E-06  293.0  end
pu-239   12  0.0  1.32679E-04  293.0  end
pu-240   12  0.0  6.20454E-05  293.0  end
pu-241   12  0.0  3.89470E-05  293.0  end
pu-242   12  0.0  2.27791E-05  293.0  end
am-241   12  0.0  1.21104E-06  293.0  end
am-243   12  0.0  5.12320E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  5.97211E-05  293.0  end
tc-99    13  0.0  6.46473E-05  293.0  end
ru-101   13  0.0  6.61380E-05  293.0  end
rh-103   13  0.0  3.15615E-05  293.0  end
ag-109   13  0.0  5.93872E-06  293.0  end
cs-133   13  0.0  6.51320E-05  293.0  end
nd-143   13  0.0  4.05272E-05  293.0  end
nd-145   13  0.0  3.77977E-05  293.0  end
sm-147   13  0.0  3.77769E-06  293.0  end
sm-149   13  0.0  9.15705E-08  293.0  end
sm-150   13  0.0  1.68457E-05  293.0  end
sm-151   13  0.0  6.31557E-07  293.0  end
sm-152   13  0.0  6.27260E-06  293.0  end
eu-153   13  0.0  7.28585E-06  293.0  end
gd-155   13  0.0  2.85644E-09  293.0  end
u-234    13  0.0  3.43952E-06  293.0  end
u-235    13  0.0  1.34152E-04  293.0  end
u-236    13  0.0  1.25719E-04  293.0  end
u-238    13  0.0  2.11563E-02  293.0  end
np-237   13  0.0  1.62400E-05  293.0  end
pu-238   13  0.0  7.92157E-06  293.0  end
pu-239   13  0.0  1.32930E-04  293.0  end
pu-240   13  0.0  6.15186E-05  293.0  end
pu-241   13  0.0  3.86844E-05  293.0  end
pu-242   13  0.0  2.20594E-05  293.0  end
am-241   13  0.0  1.20082E-06  293.0  end
am-243   13  0.0  4.90995E-06  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  5.83173E-05  293.0  end
tc-99    14  0.0  6.33341E-05  293.0  end
ru-101   14  0.0  6.44712E-05  293.0  end
rh-103   14  0.0  3.10423E-05  293.0  end
ag-109   14  0.0  5.73898E-06  293.0  end
cs-133   14  0.0  6.39341E-05  293.0  end
nd-143   14  0.0  4.02110E-05  293.0  end
nd-145   14  0.0  3.70878E-05  293.0  end
sm-147   14  0.0  3.71195E-06  293.0  end
sm-149   14  0.0  9.22134E-08  293.0  end
sm-150   14  0.0  1.64405E-05  293.0  end
sm-151   14  0.0  6.25396E-07  293.0  end
sm-152   14  0.0  6.15690E-06  293.0  end
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eu-153    14  0.0  3.48682E-06  293.0  end
gd-155    14  0.0  1.08567E-09  293.0  end
u-234     14  0.0  5.13750E-06  293.0  end
u-235     14  0.0  3.49325E-04  293.0  end
u-236     14  0.0  1.01275E-04  293.0  end
u-238     14  0.0  2.15669E-02  293.0  end
np-237    14  0.0  8.32254E-06  293.0  end
pu-238    14  0.0  2.12847E-06  293.0  end
pu-239    14  0.0  1.31120E-04  293.0  end
pu-240    14  0.0  3.98435E-05  293.0  end
pu-241    14  0.0  2.48695E-05  293.0  end
pu-242    14  0.0  6.25093E-06  293.0  end
am-241    14  0.0  6.04673E-07  293.0  end
am-243    14  0.0  8.89528E-07  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  3.26208E-05  293.0  end
tc-99     15  0.0  3.88633E-05  293.0  end
ru-101    15  0.0  3.66334E-05  293.0  end
rh-103    15  0.0  1.95056E-05  293.0  end
ag-109    15  0.0  2.52149E-06  293.0  end
cs-133    15  0.0  4.03024E-05  293.0  end
nd-143    15  0.0  2.94693E-05  293.0  end
nd-145    15  0.0  2.34409E-05  293.0  end
sm-147    15  0.0  2.04581E-06  293.0  end
sm-149    15  0.0  1.04818E-07  293.0  end
sm-150    15  0.0  9.08430E-06  293.0  end
sm-151    15  0.0  5.08550E-07  293.0  end
sm-152    15  0.0  3.88868E-06  293.0  end
eu-153    15  0.0  3.24470E-06  293.0  end
gd-155    15  0.0  9.96413E-10  293.0  end
u-234     15  0.0  5.26210E-06  293.0  end
u-235     15  0.0  3.68717E-04  293.0  end
u-236     15  0.0  9.84635E-05  293.0  end
u-238     15  0.0  2.15906E-02  293.0  end
np-237    15  0.0  7.76651E-06  293.0  end
pu-238    15  0.0  1.87619E-06  293.0  end
pu-239    15  0.0  1.29853E-04  293.0  end
pu-240    15  0.0  3.79097E-05  293.0  end
pu-241    15  0.0  2.34701E-05  293.0  end
pu-242    15  0.0  5.51600E-06  293.0  end
am-241    15  0.0  5.50895E-07  293.0  end
am-243    15  0.0  7.45982E-07  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  2.99195E-05  293.0  end
tc-99     16  0.0  3.62688E-05  293.0  end
ru-101    16  0.0  3.39560E-05  293.0  end
rh-103    16  0.0  1.81361E-05  293.0  end
ag-109    16  0.0  2.24298E-06  293.0  end
cs-133    16  0.0  3.76852E-05  293.0  end
nd-143    16  0.0  2.78782E-05  293.0  end
nd-145    16  0.0  2.19504E-05  293.0  end
sm-147    16  0.0  1.84561E-06  293.0  end
sm-149    16  0.0  1.05235E-07  293.0  end
sm-150    16  0.0  8.35010E-06  293.0  end
sm-151    16  0.0  4.94038E-07  293.0  end
sm-152    16  0.0  3.63625E-06  293.0  end
eu-153    16  0.0  2.90044E-06  293.0  end
gd-155    16  0.0  8.74616E-10  293.0  end
u-234     16  0.0  5.44532E-06  293.0  end
u-235     16  0.0  3.98079E-04  293.0  end
u-236     16  0.0  9.41026E-05  293.0  end
u-238     16  0.0  2.16255E-02  293.0  end
np-237    16  0.0  6.96587E-06  293.0  end
pu-238    16  0.0  1.54255E-06  293.0  end
pu-239    16  0.0  1.27582E-04  293.0  end
pu-240    16  0.0  3.50137E-05  293.0  end
pu-241    16  0.0  2.13511E-05  293.0  end
pu-242    16  0.0  4.53056E-06  293.0  end
am-241    16  0.0  4.73250E-07  293.0  end
am-243    16  0.0  5.65454E-07  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  2.55024E-05  293.0  end
tc-99     17  0.0  3.20226E-05  293.0  end
ru-101    17  0.0  2.96603E-05  293.0  end
rh-103    17  0.0  1.58586E-05  293.0  end
ag-109    17  0.0  1.81599E-06  293.0  end
cs-133    17  0.0  3.33671E-05  293.0  end
```

```
eu-153    14  0.0  7.06000E-06  293.0  end
gd-155    14  0.0  2.72474E-09  293.0  end
u-234     14  0.0  3.53182E-06  293.0  end
u-235     14  0.0  1.43388E-04  293.0  end
u-236     14  0.0  1.25122E-04  293.0  end
u-238     14  0.0  2.11834E-02  293.0  end
np-237    14  0.0  1.58527E-05  293.0  end
pu-238    14  0.0  7.48969E-06  293.0  end
pu-239    14  0.0  1.33284E-04  293.0  end
pu-240    14  0.0  6.06508E-05  293.0  end
pu-241    14  0.0  3.81956E-05  293.0  end
pu-242    14  0.0  2.09077E-05  293.0  end
am-241    14  0.0  1.18227E-06  293.0  end
am-243    14  0.0  4.56963E-06  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  5.59766E-05  293.0  end
tc-99     15  0.0  6.11354E-05  293.0  end
ru-101    15  0.0  6.17305E-05  293.0  end
rh-103    15  0.0  3.01438E-05  293.0  end
ag-109    15  0.0  5.41006E-06  293.0  end
cs-133    15  0.0  6.19087E-05  293.0  end
nd-143    15  0.0  3.96147E-05  293.0  end
nd-145    15  0.0  3.58942E-05  293.0  end
sm-147    15  0.0  3.59443E-06  293.0  end
sm-149    15  0.0  9.35183E-08  293.0  end
sm-150    15  0.0  1.57616E-05  293.0  end
sm-151    15  0.0  6.15679E-07  293.0  end
sm-152    15  0.0  5.96088E-06  293.0  end
eu-153    15  0.0  6.68553E-06  293.0  end
gd-155    15  0.0  2.51946E-09  293.0  end
u-234     15  0.0  3.68665E-06  293.0  end
u-235     15  0.0  1.59551E-04  293.0  end
u-236     15  0.0  1.23904E-04  293.0  end
u-238     15  0.0  2.12279E-02  293.0  end
np-237    15  0.0  1.51594E-05  293.0  end
pu-238    15  0.0  6.79175E-06  293.0  end
pu-239    15  0.0  1.33837E-04  293.0  end
pu-240    15  0.0  5.90808E-05  293.0  end
pu-241    15  0.0  3.73309E-05  293.0  end
pu-242    15  0.0  1.90485E-05  293.0  end
am-241    15  0.0  1.14652E-06  293.0  end
am-243    15  0.0  4.03851E-06  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  5.23242E-05  293.0  end
tc-99     16  0.0  5.76858E-05  293.0  end
ru-101    16  0.0  5.75451E-05  293.0  end
rh-103    16  0.0  2.86662E-05  293.0  end
ag-109    16  0.0  4.90848E-06  293.0  end
cs-133    16  0.0  5.86844E-05  293.0  end
nd-143    16  0.0  3.85167E-05  293.0  end
nd-145    16  0.0  3.40075E-05  293.0  end
sm-147    16  0.0  3.39266E-06  293.0  end
sm-149    16  0.0  9.58510E-08  293.0  end
sm-150    16  0.0  1.46999E-05  293.0  end
sm-151    16  0.0  6.00904E-07  293.0  end
sm-152    16  0.0  5.64916E-06  293.0  end
eu-153    16  0.0  6.10788E-06  293.0  end
gd-155    16  0.0  2.22590E-09  293.0  end
u-234     16  0.0  3.93006E-06  293.0  end
u-235     16  0.0  1.86627E-04  293.0  end
u-236     16  0.0  1.21491E-04  293.0  end
u-238     16  0.0  2.12937E-02  293.0  end
np-237    16  0.0  1.40001E-05  293.0  end
pu-238    16  0.0  5.77184E-06  293.0  end
pu-239    16  0.0  1.34521E-04  293.0  end
pu-240    16  0.0  5.63694E-05  293.0  end
pu-241    16  0.0  3.58101E-05  293.0  end
pu-242    16  0.0  1.63183E-05  293.0  end
am-241    16  0.0  1.07879E-06  293.0  end
am-243    16  0.0  3.29464E-06  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  4.65569E-05  293.0  end
tc-99     17  0.0  5.22062E-05  293.0  end
ru-101    17  0.0  5.11495E-05  293.0  end
rh-103    17  0.0  2.61716E-05  293.0  end
ag-109    17  0.0  4.15057E-06  293.0  end
cs-133    17  0.0  5.34588E-05  293.0  end
```

nd-143	17	0.0	2.51233E-05	293.0	end
nd-145	17	0.0	1.94933E-05	293.0	end
sm-147	17	0.0	1.52096E-06	293.0	end
sm-149	17	0.0	1.05319E-07	293.0	end
sm-150	17	0.0	7.17686E-06	293.0	end
sm-151	17	0.0	4.69348E-07	293.0	end
sm-152	17	0.0	3.21675E-06	293.0	end
eu-153	17	0.0	2.36941E-06	293.0	end
gd-155	17	0.0	6.99396E-10	293.0	end
u-234	17	0.0	5.74484E-06	293.0	end
u-235	17	0.0	4.48304E-04	293.0	end
u-236	17	0.0	8.63882E-05	293.0	end
u-238	17	0.0	2.16799E-02	293.0	end
np-237	17	0.0	5.70675E-06	293.0	end
pu-238	17	0.0	1.08656E-06	293.0	end
pu-239	17	0.0	1.22672E-04	293.0	end
pu-240	17	0.0	3.01727E-05	293.0	end
pu-241	17	0.0	1.77719E-05	293.0	end
pu-242	17	0.0	3.15687E-06	293.0	end
am-241	17	0.0	3.53101E-07	293.0	end
am-243	17	0.0	3.40169E-07	293.0	end
o	17	0.0	4.58960E-02	293.0	end
mo-95	18	0.0	1.76069E-05	293.0	end
tc-99	18	0.0	2.44029E-05	293.0	end
ru-101	18	0.0	2.22017E-05	293.0	end
rh-103	18	0.0	1.16905E-05	293.0	end
ag-109	18	0.0	1.14486E-06	293.0	end
cs-133	18	0.0	2.55237E-05	293.0	end
nd-143	18	0.0	1.97398E-05	293.0	end
nd-145	18	0.0	1.50279E-05	293.0	end
sm-147	18	0.0	9.68662E-07	293.0	end
sm-149	18	0.0	1.03353E-07	293.0	end
sm-150	18	0.0	5.17314E-06	293.0	end
sm-151	18	0.0	4.22030E-07	293.0	end
sm-152	18	0.0	2.44169E-06	293.0	end
eu-153	18	0.0	1.52808E-06	293.0	end
gd-155	18	0.0	4.55941E-10	293.0	end
u-234	18	0.0	6.28093E-06	293.0	end
u-235	18	0.0	5.45227E-04	293.0	end
u-236	18	0.0	7.07423E-05	293.0	end
u-238	18	0.0	2.17696E-02	293.0	end
np-237	18	0.0	3.67141E-06	293.0	end
pu-238	18	0.0	5.13379E-07	293.0	end
pu-239	18	0.0	1.09458E-04	293.0	end
pu-240	18	0.0	2.13488E-05	293.0	end
pu-241	18	0.0	1.13060E-05	293.0	end
pu-242	18	0.0	1.39242E-06	293.0	end
am-241	18	0.0	1.73488E-07	293.0	end
am-243	18	0.0	1.08363E-07	293.0	end
o	18	0.0	4.58960E-02	293.0	end
mo-95	19	0.0	3.63740E-06	293.0	end
tc-99	19	0.0	9.66639E-06	293.0	end
ru-101	19	0.0	8.58094E-06	293.0	end
rh-103	19	0.0	3.64490E-06	293.0	end
ag-109	19	0.0	2.39595E-07	293.0	end
cs-133	19	0.0	1.00696E-05	293.0	end
nd-143	19	0.0	7.87013E-06	293.0	end
nd-145	19	0.0	6.16638E-06	293.0	end
sm-147	19	0.0	1.70382E-07	293.0	end
sm-149	19	0.0	8.96104E-08	293.0	end
sm-150	19	0.0	1.75992E-06	293.0	end
sm-151	19	0.0	3.01519E-07	293.0	end
sm-152	19	0.0	8.68379E-07	293.0	end
eu-153	19	0.0	3.79116E-07	293.0	end
gd-155	19	0.0	1.87351E-10	293.0	end
u-234	19	0.0	7.31229E-06	293.0	end
u-235	19	0.0	7.59727E-04	293.0	end
u-236	19	0.0	3.36570E-05	293.0	end
u-238	19	0.0	2.19226E-02	293.0	end
np-237	19	0.0	8.67617E-07	293.0	end
pu-238	19	0.0	4.56514E-08	293.0	end
pu-239	19	0.0	6.05721E-05	293.0	end
pu-240	19	0.0	5.53029E-06	293.0	end
pu-241	19	0.0	1.57134E-06	293.0	end
pu-242	19	0.0	6.39546E-08	293.0	end
am-241	19	0.0	9.30029E-09	293.0	end
am-243	19	0.0	1.68067E-09	293.0	end

nd-143	17	0.0	3.63853E-05	293.0	end
nd-145	17	0.0	3.09781E-05	293.0	end
sm-147	17	0.0	3.03533E-06	293.0	end
sm-149	17	0.0	9.92769E-08	293.0	end
sm-150	17	0.0	1.30259E-05	293.0	end
sm-151	17	0.0	5.76253E-07	293.0	end
sm-152	17	0.0	5.14759E-06	293.0	end
eu-153	17	0.0	5.21793E-06	293.0	end
gd-155	17	0.0	1.80414E-09	293.0	end
u-234	17	0.0	4.31779E-06	293.0	end
u-235	17	0.0	2.33815E-04	293.0	end
u-236	17	0.0	1.16441E-04	293.0	end
u-238	17	0.0	2.13901E-02	293.0	end
np-237	17	0.0	1.21430E-05	293.0	end
pu-238	17	0.0	4.35058E-06	293.0	end
pu-239	17	0.0	1.34861E-04	293.0	end
pu-240	17	0.0	5.15750E-05	293.0	end
pu-241	17	0.0	3.28873E-05	293.0	end
pu-242	17	0.0	1.24681E-05	293.0	end
am-241	17	0.0	9.45989E-07	293.0	end
am-243	17	0.0	2.30830E-06	293.0	end
o	17	0.0	4.58960E-02	293.0	end
mo-95	18	0.0	3.50953E-05	293.0	end
tc-99	18	0.0	4.12389E-05	293.0	end
ru-101	18	0.0	3.91233E-05	293.0	end
rh-103	18	0.0	2.07417E-05	293.0	end
ag-109	18	0.0	2.78783E-06	293.0	end
cs-133	18	0.0	4.26833E-05	293.0	end
nd-143	18	0.0	3.08607E-05	293.0	end
nd-145	18	0.0	2.47994E-05	293.0	end
sm-147	18	0.0	2.22874E-06	293.0	end
sm-149	18	0.0	1.04223E-07	293.0	end
sm-150	18	0.0	9.76708E-06	293.0	end
sm-151	18	0.0	5.21459E-07	293.0	end
sm-152	18	0.0	4.11733E-06	293.0	end
eu-153	18	0.0	3.57230E-06	293.0	end
gd-155	18	0.0	1.11792E-09	293.0	end
u-234	18	0.0	5.09418E-06	293.0	end
u-235	18	0.0	3.42706E-04	293.0	end
u-236	18	0.0	1.02218E-04	293.0	end
u-238	18	0.0	2.15582E-02	293.0	end
np-237	18	0.0	8.51755E-06	293.0	end
pu-238	18	0.0	2.22102E-06	293.0	end
pu-239	18	0.0	1.31508E-04	293.0	end
pu-240	18	0.0	4.05066E-05	293.0	end
pu-241	18	0.0	2.53462E-05	293.0	end
pu-242	18	0.0	6.51847E-06	293.0	end
am-241	18	0.0	6.23437E-07	293.0	end
am-243	18	0.0	9.43518E-07	293.0	end
o	18	0.0	4.58960E-02	293.0	end
mo-95	19	0.0	1.09471E-05	293.0	end
tc-99	19	0.0	1.78277E-05	293.0	end
ru-101	19	0.0	1.59992E-05	293.0	end
rh-103	19	0.0	8.05884E-06	293.0	end
ag-109	19	0.0	6.72020E-07	293.0	end
cs-133	19	0.0	1.86689E-05	293.0	end
nd-143	19	0.0	1.46732E-05	293.0	end
nd-145	19	0.0	1.11131E-05	293.0	end
sm-147	19	0.0	5.53431E-07	293.0	end
sm-149	19	0.0	9.90475E-08	293.0	end
sm-150	19	0.0	3.56636E-06	293.0	end
sm-151	19	0.0	3.76883E-07	293.0	end
sm-152	19	0.0	1.74805E-06	293.0	end
eu-153	19	0.0	9.31624E-07	293.0	end
gd-155	19	0.0	3.10408E-10	293.0	end
u-234	19	0.0	6.74208E-06	293.0	end
u-235	19	0.0	6.36218E-04	293.0	end
u-236	19	0.0	5.53385E-05	293.0	end
u-238	19	0.0	2.18416E-02	293.0	end
np-237	19	0.0	2.21356E-06	293.0	end
pu-238	19	0.0	2.21893E-07	293.0	end
pu-239	19	0.0	9.22368E-05	293.0	end
pu-240	19	0.0	1.38843E-05	293.0	end
pu-241	19	0.0	6.19968E-06	293.0	end
pu-242	19	0.0	5.14053E-07	293.0	end
am-241	19	0.0	6.92533E-08	293.0	end
am-243	19	0.0	2.74760E-08	293.0	end

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 o        19  0.0  4.58960E-02  293.0  end
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EOF ed13_f01_id00000_b30.mip

File ed24_f01_id00522_b30.mip

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 lfd.Nr.:   1 aus sha_alf.mod


 mo-95     1  0.0  4.67069E-06  293.0  end
 tc-99     1  0.0  1.09863E-05  293.0  end
 ru-101    1  0.0  9.76043E-06  293.0  end
 rh-103    1  0.0  4.33782E-06  293.0  end
 ag-109    1  0.0  2.96840E-07  293.0  end
 cs-133    1  0.0  1.14667E-05  293.0  end
 nd-143    1  0.0  9.00927E-06  293.0  end
 nd-145    1  0.0  6.97408E-06  293.0  end
 sm-147    1  0.0  2.19762E-07  293.0  end
 sm-149    1  0.0  9.14633E-08  293.0  end
 sm-150    1  0.0  2.03663E-06  293.0  end
 sm-151    1  0.0  3.17012E-07  293.0  end
 sm-152    1  0.0  1.00990E-06  293.0  end
 eu-153    1  0.0  4.53614E-07  293.0  end
 gd-155    1  0.0  2.04788E-10  293.0  end
 u-234     1  0.0  7.22023E-06  293.0  end
 u-235     1  0.0  7.38873E-04  293.0  end
 u-236     1  0.0  3.73654E-05  293.0  end
 u-238     1  0.0  2.19107E-02  293.0  end
 np-237    1  0.0  1.05409E-06  293.0  end
 pu-238    1  0.0  6.33352E-08  293.0  end
 pu-239    1  0.0  6.66489E-05  293.0  end
 pu-240    1  0.0  6.76284E-06  293.0  end
 pu-241    1  0.0  2.13231E-06  293.0  end
 pu-242    1  0.0  1.00259E-07  293.0  end
 am-241    1  0.0  1.44253E-08  293.0  end
 am-243    1  0.0  3.04791E-09  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  2.12313E-05  293.0  end
 tc-99     2  0.0  2.79087E-05  293.0  end
 ru-101    2  0.0  2.55954E-05  293.0  end
 rh-103    2  0.0  1.36186E-05  293.0  end
 ag-109    2  0.0  1.43798E-06  293.0  end
 cs-133    2  0.0  2.91472E-05  293.0  end
 nd-143    2  0.0  2.22842E-05  293.0  end
 nd-145    2  0.0  1.70912E-05  293.0  end
 sm-147    2  0.0  1.21594E-06  293.0  end
 sm-149    2  0.0  1.04634E-07  293.0  end
 sm-150    2  0.0  6.07782E-06  293.0  end
 sm-151    2  0.0  4.44308E-07  293.0  end
 sm-152    2  0.0  2.80210E-06  293.0  end
 eu-153    2  0.0  1.89643E-06  293.0  end
 gd-155    2  0.0  5.57124E-10  293.0  end
 u-234     2  0.0  6.03439E-06  293.0  end
 u-235     2  0.0  4.99519E-04  293.0  end
 u-236     2  0.0  7.82335E-05  293.0  end
 u-238     2  0.0  2.17298E-02  293.0  end
 np-237    2  0.0  4.56568E-06  293.0  end
 pu-238    2  0.0  7.41492E-07  293.0  end
 pu-239    2  0.0  1.16328E-04  293.0  end
 pu-240    2  0.0  2.54122E-05  293.0  end
 pu-241    2  0.0  1.42574E-05  293.0  end
 pu-242    2  0.0  2.09726E-06  293.0  end
 am-241    2  0.0  2.49228E-07  293.0  end
 am-243    2  0.0  1.91755E-07  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
 mo-95     3  0.0  2.90427E-05  293.0  end
 tc-99     3  0.0  3.54266E-05  293.0  end
 ru-101    3  0.0  3.30957E-05  293.0  end
 rh-103    3  0.0  1.76880E-05  293.0  end
 ag-109    3  0.0  2.15539E-06  293.0  end
 cs-133    3  0.0  3.68325E-05  293.0  end
 nd-143    3  0.0  2.73465E-05  293.0  end
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 o        19  0.0  4.58960E-02  293.0  end
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EOF ed13_f01_id00000_b50.mip

File ed24_f01_id00522_b50.mip

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 lfd.Nr.:   2 aus sha_alf.mod


 mo-95     1  0.0  1.26482E-05  293.0  end
 tc-99     1  0.0  1.95368E-05  293.0  end
 ru-101    1  0.0  1.75918E-05  293.0  end
 rh-103    1  0.0  9.00247E-06  293.0  end
 ag-109    1  0.0  7.84850E-07  293.0  end
 cs-133    1  0.0  2.04575E-05  293.0  end
 nd-143    1  0.0  1.60256E-05  293.0  end
 nd-145    1  0.0  1.21365E-05  293.0  end
 sm-147    1  0.0  6.53922E-07  293.0  end
 sm-149    1  0.0  1.00426E-07  293.0  end
 sm-150    1  0.0  3.97195E-06  293.0  end
 sm-151    1  0.0  3.89219E-07  293.0  end
 sm-152    1  0.0  1.93048E-06  293.0  end
 eu-153    1  0.0  1.07424E-06  293.0  end
 gd-155    1  0.0  3.43221E-10  293.0  end
 u-234     1  0.0  6.62234E-06  293.0  end
 u-235     1  0.0  6.11882E-04  293.0  end
 u-236     1  0.0  5.95161E-05  293.0  end
 u-238     1  0.0  2.18235E-02  293.0  end
 np-237    1  0.0  2.56224E-06  293.0  end
 pu-238    1  0.0  2.82537E-07  293.0  end
 pu-239    1  0.0  9.73220E-05  293.0  end
 pu-240    1  0.0  1.57889E-05  293.0  end
 pu-241    1  0.0  7.44622E-06  293.0  end
 pu-242    1  0.0  6.91114E-07  293.0  end
 am-241    1  0.0  9.13615E-08  293.0  end
 am-243    1  0.0  4.11972E-08  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  3.98296E-05  293.0  end
 tc-99     2  0.0  4.57776E-05  293.0  end
 ru-101    2  0.0  4.39881E-05  293.0  end
 rh-103    2  0.0  2.30492E-05  293.0  end
 ag-109    2  0.0  3.32577E-06  293.0  end
 cs-133    2  0.0  4.71892E-05  293.0  end
 nd-143    2  0.0  3.33345E-05  293.0  end
 nd-145    2  0.0  2.73747E-05  293.0  end
 sm-147    2  0.0  2.57287E-06  293.0  end
 sm-149    2  0.0  1.02568E-07  293.0  end
 sm-150    2  0.0  1.10964E-05  293.0  end
 sm-151    2  0.0  5.45081E-07  293.0  end
 sm-152    2  0.0  4.54846E-06  293.0  end
 eu-153    2  0.0  4.22833E-06  293.0  end
 gd-155    2  0.0  1.37673E-09  293.0  end
 u-234     2  0.0  4.77306E-06  293.0  end
 u-235     2  0.0  2.95379E-04  293.0  end
 u-236     2  0.0  1.08742E-04  293.0  end
 u-238     2  0.0  2.14917E-02  293.0  end
 np-237    2  0.0  9.99246E-06  293.0  end
 pu-238    2  0.0  2.99116E-06  293.0  end
 pu-239    2  0.0  1.33676E-04  293.0  end
 pu-240    2  0.0  4.52922E-05  293.0  end
 pu-241    2  0.0  2.87132E-05  293.0  end
 pu-242    2  0.0  8.70806E-06  293.0  end
 am-241    2  0.0  7.61991E-07  293.0  end
 am-243    2  0.0  1.41614E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
 mo-95     3  0.0  5.06994E-05  293.0  end
 tc-99     3  0.0  5.61459E-05  293.0  end
 ru-101    3  0.0  5.57179E-05  293.0  end
 rh-103    3  0.0  2.79821E-05  293.0  end
 ag-109    3  0.0  4.69054E-06  293.0  end
 cs-133    3  0.0  5.72281E-05  293.0  end
 nd-143    3  0.0  3.79639E-05  293.0  end
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nd-145    3  0.0  2.14648E-05  293.0  end
sm-147    3  0.0  1.78074E-06  293.0  end
sm-149    3  0.0  1.05311E-07  293.0  end
sm-150    3  0.0  8.11454E-06  293.0  end
sm-151    3  0.0  4.89233E-07  293.0  end
sm-152    3  0.0  3.55372E-06  293.0  end
eu-153    3  0.0  2.79184E-06  293.0  end
gd-155    3  0.0  8.37506E-10  293.0  end
u-234     3  0.0  5.50475E-06  293.0  end
u-235     3  0.0  4.07826E-04  293.0  end
u-236     3  0.0  9.26287E-05  293.0  end
u-238     3  0.0  2.16368E-02  293.0  end
np-237    3  0.0  6.71084E-06  293.0  end
pu-238    3  0.0  1.44346E-06  293.0  end
pu-239    3  0.0  1.26732E-04  293.0  end
pu-240    3  0.0  3.40627E-05  293.0  end
pu-241    3  0.0  2.06501E-05  293.0  end
pu-242    3  0.0  4.23479E-06  293.0  end
am-241    3  0.0  4.48617E-07  293.0  end
am-243    3  0.0  5.14189E-07  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  3.66247E-05  293.0  end
tc-99     4  0.0  4.27056E-05  293.0  end
ru-101    4  0.0  4.06791E-05  293.0  end
rh-103    4  0.0  2.14951E-05  293.0  end
ag-109    4  0.0  2.95753E-06  293.0  end
cs-133    4  0.0  4.41455E-05  293.0  end
nd-143    4  0.0  3.16872E-05  293.0  end
nd-145    4  0.0  2.56340E-05  293.0  end
sm-147    4  0.0  2.34093E-06  293.0  end
sm-149    4  0.0  1.03755E-07  293.0  end
sm-150    4  0.0  1.01928E-05  293.0  end
sm-151    4  0.0  5.29238E-07  293.0  end
sm-152    4  0.0  4.25742E-06  293.0  end
eu-153    4  0.0  3.78002E-06  293.0  end
gd-155    4  0.0  1.19767E-09  293.0  end
u-234     4  0.0  4.99050E-06  293.0  end
u-235     4  0.0  3.27069E-04  293.0  end
u-236     4  0.0  1.04426E-04  293.0  end
u-238     4  0.0  2.15373E-02  293.0  end
np-237    4  0.0  8.98879E-06  293.0  end
pu-238    4  0.0  2.45348E-06  293.0  end
pu-239    4  0.0  1.32347E-04  293.0  end
pu-240    4  0.0  4.20805E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end
pu-239    5  0.0  1.33299E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end
pu-242    5  0.0  8.19047E-06  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
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nd-145    3  0.0  3.31608E-05  293.0  end
sm-147    3  0.0  3.29644E-06  293.0  end
sm-149    3  0.0  9.68565E-08  293.0  end
sm-150    3  0.0  1.42273E-05  293.0  end
sm-151    3  0.0  5.94146E-07  293.0  end
sm-152    3  0.0  5.50897E-06  293.0  end
eu-153    3  0.0  5.85408E-06  293.0  end
gd-155    3  0.0  2.10197E-09  293.0  end
u-234     3  0.0  4.03888E-06  293.0  end
u-235     3  0.0  1.99381E-04  293.0  end
u-236     3  0.0  1.20224E-04  293.0  end
u-238     3  0.0  2.13218E-02  293.0  end
np-237    3  0.0  1.34780E-05  293.0  end
pu-238    3  0.0  5.34761E-06  293.0  end
pu-239    3  0.0  1.34721E-04  293.0  end
pu-240    3  0.0  5.50798E-05  293.0  end
pu-241    3  0.0  3.50511E-05  293.0  end
pu-242    3  0.0  1.51762E-05  293.0  end
am-241    3  0.0  1.04439E-06  293.0  end
am-243    3  0.0  2.99423E-06  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  5.96712E-05  293.0  end
tc-99     4  0.0  6.46007E-05  293.0  end
ru-101    4  0.0  6.60785E-05  293.0  end
rh-103    4  0.0  3.15433E-05  293.0  end
ag-109    4  0.0  5.93158E-06  293.0  end
cs-133    4  0.0  6.50896E-05  293.0  end
nd-143    4  0.0  4.05165E-05  293.0  end
nd-145    4  0.0  3.77725E-05  293.0  end
sm-147    4  0.0  3.77541E-06  293.0  end
sm-149    4  0.0  9.15997E-08  293.0  end
sm-150    4  0.0  1.68313E-05  293.0  end
sm-151    4  0.0  6.31352E-07  293.0  end
sm-152    4  0.0  6.26848E-06  293.0  end
eu-153    4  0.0  7.27784E-06  293.0  end
gd-155    4  0.0  2.85189E-09  293.0  end
u-234     4  0.0  3.44279E-06  293.0  end
u-235     4  0.0  1.34474E-04  293.0  end
u-236     4  0.0  1.25700E-04  293.0  end
u-238     4  0.0  2.11573E-02  293.0  end
np-237    4  0.0  1.62253E-05  293.0  end
pu-238    4  0.0  7.90604E-06  293.0  end
pu-239    4  0.0  1.32944E-04  293.0  end
pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  8.76042E-06  293.0  end
pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  3.94419E-05  293.0  end
pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  5.58383E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
```

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mo-95     6  0.0  3.99245E-05  293.0  end
tc-99     6  0.0  4.58684E-05  293.0  end
ru-101    6  0.0  4.40871E-05  293.0  end
rh-103    6  0.0  2.30946E-05  293.0  end
ag-109    6  0.0  3.33693E-06  293.0  end
cs-133    6  0.0  4.72788E-05  293.0  end
nd-143    6  0.0  3.33814E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end
sm-147    7  0.0  2.60653E-06  293.0  end
sm-149    7  0.0  1.02369E-07  293.0  end
sm-150    7  0.0  1.12305E-05  293.0  end
sm-151    7  0.0  5.47362E-07  293.0  end
sm-152    7  0.0  4.59108E-06  293.0  end
eu-153    7  0.0  4.29579E-06  293.0  end
gd-155    7  0.0  1.40447E-09  293.0  end
u-234     7  0.0  4.74102E-06  293.0  end
u-235     7  0.0  2.90831E-04  293.0  end
u-236     7  0.0  1.09344E-04  293.0  end
u-238     7  0.0  2.14850E-02  293.0  end
np-237    7  0.0  1.01420E-05  293.0  end
pu-238    7  0.0  3.07627E-06  293.0  end
pu-239    7  0.0  1.33828E-04  293.0  end
pu-240    7  0.0  4.57545E-05  293.0  end
pu-241    7  0.0  2.90311E-05  293.0  end
pu-242    7  0.0  8.94661E-06  293.0  end
am-241    7  0.0  7.75585E-07  293.0  end
am-243    7  0.0  1.47055E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  3.95792E-05  293.0  end
tc-99     8  0.0  4.55378E-05  293.0  end
ru-101    8  0.0  4.37271E-05  293.0  end
rh-103    8  0.0  2.29293E-05  293.0  end
ag-109    8  0.0  3.29641E-06  293.0  end
cs-133    8  0.0  4.69526E-05  293.0  end
nd-143    8  0.0  3.32102E-05  293.0  end
nd-145    8  0.0  2.72393E-05  293.0  end
sm-147    8  0.0  2.55497E-06  293.0  end
sm-149    8  0.0  1.02671E-07  293.0  end
sm-150    8  0.0  1.10254E-05  293.0  end
sm-151    8  0.0  5.43866E-07  293.0  end
sm-152    8  0.0  4.52584E-06  293.0  end
eu-153    8  0.0  4.19271E-06  293.0  end
gd-155    8  0.0  1.36216E-09  293.0  end
u-234     8  0.0  4.79005E-06  293.0  end
u-235     8  0.0  2.97803E-04  293.0  end
u-236     8  0.0  1.08419E-04  293.0  end
u-238     8  0.0  2.14952E-02  293.0  end
np-237    8  0.0  9.91337E-06  293.0  end
pu-238    8  0.0  2.94667E-06  293.0  end
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```
mo-95     6  0.0  6.36571E-05  293.0  end
tc-99     6  0.0  6.83111E-05  293.0  end
ru-101    6  0.0  7.09080E-05  293.0  end
rh-103    6  0.0  3.29433E-05  293.0  end
ag-109    6  0.0  6.50953E-06  293.0  end
cs-133    6  0.0  6.84264E-05  293.0  end
nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  4.00320E-05  293.0  end
sm-147    7  0.0  3.96292E-06  293.0  end
sm-149    7  0.0  8.86158E-08  293.0  end
sm-150    7  0.0  1.81246E-05  293.0  end
sm-151    7  0.0  6.48610E-07  293.0  end
sm-152    7  0.0  6.64004E-06  293.0  end
eu-153    7  0.0  8.00504E-06  293.0  end
gd-155    7  0.0  3.27190E-09  293.0  end
u-234     7  0.0  3.14936E-06  293.0  end
u-235     7  0.0  1.07033E-04  293.0  end
u-236     7  0.0  1.27003E-04  293.0  end
u-238     7  0.0  2.10638E-02  293.0  end
np-237    7  0.0  1.75686E-05  293.0  end
pu-238    7  0.0  9.36658E-06  293.0  end
pu-239    7  0.0  1.31543E-04  293.0  end
pu-240    7  0.0  6.41029E-05  293.0  end
pu-241    7  0.0  3.98988E-05  293.0  end
pu-242    7  0.0  2.59358E-05  293.0  end
am-241    7  0.0  1.24514E-06  293.0  end
am-243    7  0.0  6.08700E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  6.35416E-05  293.0  end
tc-99     8  0.0  6.82041E-05  293.0  end
ru-101    8  0.0  7.07660E-05  293.0  end
rh-103    8  0.0  3.29044E-05  293.0  end
ag-109    8  0.0  6.49260E-06  293.0  end
cs-133    8  0.0  6.83313E-05  293.0  end
nd-143    8  0.0  4.12258E-05  293.0  end
nd-145    8  0.0  3.97090E-05  293.0  end
sm-147    8  0.0  3.93831E-06  293.0  end
sm-149    8  0.0  8.90389E-08  293.0  end
sm-150    8  0.0  1.79393E-05  293.0  end
sm-151    8  0.0  6.46165E-07  293.0  end
sm-152    8  0.0  6.58693E-06  293.0  end
eu-153    8  0.0  7.90004E-06  293.0  end
gd-155    8  0.0  3.20910E-09  293.0  end
u-234     8  0.0  3.19131E-06  293.0  end
u-235     8  0.0  1.10770E-04  293.0  end
u-236     8  0.0  1.26880E-04  293.0  end
u-238     8  0.0  2.10779E-02  293.0  end
np-237    8  0.0  1.73813E-05  293.0  end
pu-238    8  0.0  9.14952E-06  293.0  end
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pu-239    8  0.0  1.33592E-04  293.0  end
pu-240    8  0.0  4.50459E-05  293.0  end
pu-241    8  0.0  2.85432E-05  293.0  end
pu-242    8  0.0  8.58315E-06  293.0  end
am-241    8  0.0  7.54760E-07  293.0  end
am-243    8  0.0  1.38782E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  3.85161E-05  293.0  end
tc-99     9  0.0  4.45193E-05  293.0  end
ru-101    9  0.0  4.26241E-05  293.0  end
rh-103    9  0.0  2.24167E-05  293.0  end
ag-109    9  0.0  3.17286E-06  293.0  end
cs-133    9  0.0  4.59459E-05  293.0  end
nd-143    9  0.0  3.26739E-05  293.0  end
nd-145    9  0.0  2.66628E-05  293.0  end
sm-147    9  0.0  2.47847E-06  293.0  end
sm-149    9  0.0  1.03087E-07  293.0  end
sm-150    9  0.0  1.07246E-05  293.0  end
sm-151    9  0.0  5.38669E-07  293.0  end
sm-152    9  0.0  4.42961E-06  293.0  end
eu-153    9  0.0  4.04254E-06  293.0  end
gd-155    9  0.0  1.30144E-09  293.0  end
u-234     9  0.0  4.86219E-06  293.0  end
u-235     9  0.0  3.08189E-04  293.0  end
u-236     9  0.0  1.07020E-04  293.0  end
u-238     9  0.0  2.15106E-02  293.0  end
np-237    9  0.0  9.57877E-06  293.0  end
pu-238    9  0.0  2.76242E-06  293.0  end
pu-239    9  0.0  1.33196E-04  293.0  end
pu-240    9  0.0  4.39911E-05  293.0  end
pu-241    9  0.0  2.78109E-05  293.0  end
pu-242    9  0.0  8.06416E-06  293.0  end
am-241    9  0.0  7.23880E-07  293.0  end
am-243    9  0.0  1.27181E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  3.77225E-05  293.0  end
tc-99    10  0.0  4.37585E-05  293.0  end
ru-101   10  0.0  4.18054E-05  293.0  end
rh-103   10  0.0  2.20313E-05  293.0  end
ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
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pu-239    8  0.0  1.31758E-04  293.0  end
pu-240    8  0.0  6.37523E-05  293.0  end
pu-241    8  0.0  3.97436E-05  293.0  end
pu-242    8  0.0  2.53525E-05  293.0  end
am-241    8  0.0  1.24005E-06  293.0  end
am-243    8  0.0  5.90529E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  6.25017E-05  293.0  end
tc-99     9  0.0  6.72392E-05  293.0  end
ru-101    9  0.0  6.94929E-05  293.0  end
rh-103    9  0.0  3.25501E-05  293.0  end
ag-109    9  0.0  6.34060E-06  293.0  end
cs-133    9  0.0  6.74704E-05  293.0  end
nd-143    9  0.0  4.10587E-05  293.0  end
nd-145    9  0.0  3.91922E-05  293.0  end
sm-147    9  0.0  3.89739E-06  293.0  end
sm-149    9  0.0  8.97077E-08  293.0  end
sm-150    9  0.0  1.76431E-05  293.0  end
sm-151    9  0.0  6.42227E-07  293.0  end
sm-152    9  0.0  6.50205E-06  293.0  end
eu-153    9  0.0  7.73280E-06  293.0  end
gd-155    9  0.0  3.11030E-09  293.0  end
u-234     9  0.0  3.25841E-06  293.0  end
u-235     9  0.0  1.16875E-04  293.0  end
u-236     9  0.0  1.26635E-04  293.0  end
u-238     9  0.0  2.10999E-02  293.0  end
np-237    9  0.0  1.70808E-05  293.0  end
pu-238    9  0.0  8.80797E-06  293.0  end
pu-239    9  0.0  1.32088E-04  293.0  end
pu-240    9  0.0  6.31770E-05  293.0  end
pu-241    9  0.0  3.94804E-05  293.0  end
pu-242    9  0.0  2.44361E-05  293.0  end
am-241    9  0.0  1.23098E-06  293.0  end
am-243    9  0.0  5.62282E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  6.17218E-05  293.0  end
tc-99    10  0.0  6.65140E-05  293.0  end
ru-101   10  0.0  6.85447E-05  293.0  end
rh-103   10  0.0  3.22787E-05  293.0  end
ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
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gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
u-235    11  0.0  3.22255E-04  293.0  end
u-236    11  0.0  1.05095E-04  293.0  end
u-238    11  0.0  2.15307E-02  293.0  end
np-237   11  0.0  9.13701E-06  293.0  end
pu-238   11  0.0  2.52920E-06  293.0  end
pu-239   11  0.0  1.32580E-04  293.0  end
pu-240   11  0.0  4.25667E-05  293.0  end
pu-241   11  0.0  2.68115E-05  293.0  end
pu-242   11  0.0  7.40231E-06  293.0  end
am-241   11  0.0  6.82477E-07  293.0  end
am-243   11  0.0  1.12799E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  3.63734E-05  293.0  end
tc-99    12  0.0  4.24647E-05  293.0  end
ru-101   12  0.0  4.04227E-05  293.0  end
rh-103   12  0.0  2.13720E-05  293.0  end
ag-109   12  0.0  2.92939E-06  293.0  end
cs-133   12  0.0  4.39058E-05  293.0  end
nd-143   12  0.0  3.15532E-05  293.0  end
nd-145   12  0.0  2.54971E-05  293.0  end
sm-147   12  0.0  2.32256E-06  293.0  end
sm-149   12  0.0  1.03836E-07  293.0  end
sm-150   12  0.0  1.01227E-05  293.0  end
sm-151   12  0.0  5.27971E-07  293.0  end
sm-152   12  0.0  4.23447E-06  293.0  end
eu-153   12  0.0  3.74564E-06  293.0  end
gd-155   12  0.0  1.18433E-09  293.0  end
u-234    12  0.0  5.00751E-06  293.0  end
u-235    12  0.0  3.29615E-04  293.0  end
u-236    12  0.0  1.04069E-04  293.0  end
u-238    12  0.0  2.15407E-02  293.0  end
np-237   12  0.0  8.91104E-06  293.0  end
pu-238   12  0.0  2.41426E-06  293.0  end
pu-239   12  0.0  1.32218E-04  293.0  end
pu-240   12  0.0  4.18236E-05  293.0  end
pu-241   12  0.0  2.62856E-05  293.0  end
pu-242   12  0.0  7.07391E-06  293.0  end
am-241   12  0.0  6.61056E-07  293.0  end
am-243   12  0.0  1.05840E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  3.56166E-05  293.0  end
tc-99    13  0.0  4.17389E-05  293.0  end
ru-101   13  0.0  3.96526E-05  293.0  end
rh-103   13  0.0  2.09998E-05  293.0  end
ag-109   13  0.0  2.84526E-06  293.0  end
cs-133   13  0.0  4.31827E-05  293.0  end
nd-143   13  0.0  3.11452E-05  293.0  end
nd-145   13  0.0  2.50844E-05  293.0  end
sm-147   13  0.0  2.26709E-06  293.0  end
sm-149   13  0.0  1.04070E-07  293.0  end
sm-150   13  0.0  9.91201E-06  293.0  end
sm-151   13  0.0  5.24130E-07  293.0  end
sm-152   13  0.0  4.16521E-06  293.0  end
eu-153   13  0.0  3.64271E-06  293.0  end
gd-155   13  0.0  1.14474E-09  293.0  end
u-234    13  0.0  5.05879E-06  293.0  end
u-235    13  0.0  3.37337E-04  293.0  end
u-236    13  0.0  1.02977E-04  293.0  end
u-238    13  0.0  2.15511E-02  293.0  end
np-237   13  0.0  8.67768E-06  293.0  end
pu-238   13  0.0  2.29860E-06  293.0  end
pu-239   13  0.0  1.31808E-04  293.0  end
pu-240   13  0.0  4.10458E-05  293.0  end
pu-241   13  0.0  2.57321E-05  293.0  end
pu-242   13  0.0  6.74198E-06  293.0  end
am-241   13  0.0  6.38790E-07  293.0  end
am-243   13  0.0  9.89299E-07  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  3.44576E-05  293.0  end
tc-99    14  0.0  4.06272E-05  293.0  end
ru-101   14  0.0  3.84781E-05  293.0  end
rh-103   14  0.0  2.04246E-05  293.0  end
ag-109   14  0.0  2.71820E-06  293.0  end
cs-133   14  0.0  4.20714E-05  293.0  end
nd-143   14  0.0  3.05087E-05  293.0  end
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gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
u-235    11  0.0  1.24735E-04  293.0  end
u-236    11  0.0  1.26254E-04  293.0  end
u-238    11  0.0  2.11266E-02  293.0  end
np-237   11  0.0  1.66955E-05  293.0  end
pu-238   11  0.0  8.39082E-06  293.0  end
pu-239   11  0.0  1.32485E-04  293.0  end
pu-240   11  0.0  6.24273E-05  293.0  end
pu-241   11  0.0  3.91285E-05  293.0  end
pu-242   11  0.0  2.33174E-05  293.0  end
am-241   11  0.0  1.21804E-06  293.0  end
am-243   11  0.0  5.28382E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  6.05774E-05  293.0  end
tc-99    12  0.0  6.54472E-05  293.0  end
ru-101   12  0.0  6.71636E-05  293.0  end
rh-103   12  0.0  3.18720E-05  293.0  end
ag-109   12  0.0  6.06172E-06  293.0  end
cs-133   12  0.0  6.58576E-05  293.0  end
nd-143   12  0.0  4.07041E-05  293.0  end
nd-145   12  0.0  3.82289E-05  293.0  end
sm-147   12  0.0  3.81610E-06  293.0  end
sm-149   12  0.0  9.10122E-08  293.0  end
sm-150   12  0.0  1.70919E-05  293.0  end
sm-151   12  0.0  6.34925E-07  293.0  end
sm-152   12  0.0  6.34352E-06  293.0  end
eu-153   12  0.0  7.42345E-06  293.0  end
gd-155   12  0.0  2.93373E-09  293.0  end
u-234    12  0.0  3.38349E-06  293.0  end
u-235    12  0.0  1.28685E-04  293.0  end
u-236    12  0.0  1.26040E-04  293.0  end
u-238    12  0.0  2.11393E-02  293.0  end
np-237   12  0.0  1.65004E-05  293.0  end
pu-238   12  0.0  8.19019E-06  293.0  end
pu-239   12  0.0  1.32679E-04  293.0  end
pu-240   12  0.0  6.20454E-05  293.0  end
pu-241   12  0.0  3.89470E-05  293.0  end
pu-242   12  0.0  2.27791E-05  293.0  end
am-241   12  0.0  1.21104E-06  293.0  end
am-243   12  0.0  5.12320E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  5.97211E-05  293.0  end
tc-99    13  0.0  6.46473E-05  293.0  end
ru-101   13  0.0  6.61380E-05  293.0  end
rh-103   13  0.0  3.15615E-05  293.0  end
ag-109   13  0.0  5.93872E-06  293.0  end
cs-133   13  0.0  6.51320E-05  293.0  end
nd-143   13  0.0  4.05272E-05  293.0  end
nd-145   13  0.0  3.77977E-05  293.0  end
sm-147   13  0.0  3.77769E-06  293.0  end
sm-149   13  0.0  9.15705E-08  293.0  end
sm-150   13  0.0  1.68457E-05  293.0  end
sm-151   13  0.0  6.31557E-07  293.0  end
sm-152   13  0.0  6.27260E-06  293.0  end
eu-153   13  0.0  7.28585E-06  293.0  end
gd-155   13  0.0  2.85644E-09  293.0  end
u-234    13  0.0  3.43952E-06  293.0  end
u-235    13  0.0  1.34152E-04  293.0  end
u-236    13  0.0  1.25719E-04  293.0  end
u-238    13  0.0  2.11563E-02  293.0  end
np-237   13  0.0  1.62400E-05  293.0  end
pu-238   13  0.0  7.92157E-06  293.0  end
pu-239   13  0.0  1.32930E-04  293.0  end
pu-240   13  0.0  6.15186E-05  293.0  end
pu-241   13  0.0  3.86844E-05  293.0  end
pu-242   13  0.0  2.20594E-05  293.0  end
am-241   13  0.0  1.20082E-06  293.0  end
am-243   13  0.0  4.90995E-06  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  5.83173E-05  293.0  end
tc-99    14  0.0  6.33341E-05  293.0  end
ru-101   14  0.0  6.44712E-05  293.0  end
rh-103   14  0.0  3.10423E-05  293.0  end
ag-109   14  0.0  5.73898E-06  293.0  end
cs-133   14  0.0  6.39341E-05  293.0  end
nd-143   14  0.0  4.02110E-05  293.0  end
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nd-145    14  0.0  2.44504E-05  293.0  end
sm-147    14  0.0  2.18173E-06  293.0  end
sm-149    14  0.0  1.04399E-07  293.0  end
sm-150    14  0.0  9.59030E-06  293.0  end
sm-151    14  0.0  5.18167E-07  293.0  end
sm-152    14  0.0  4.05863E-06  293.0  end
eu-153    14  0.0  3.48682E-06  293.0  end
gd-155    14  0.0  1.08567E-09  293.0  end
u-234     14  0.0  5.13750E-06  293.0  end
u-235     14  0.0  3.49325E-04  293.0  end
u-236     14  0.0  1.01275E-04  293.0  end
u-238     14  0.0  2.15669E-02  293.0  end
np-237    14  0.0  8.32254E-06  293.0  end
pu-238    14  0.0  2.12847E-06  293.0  end
pu-239    14  0.0  1.31120E-04  293.0  end
pu-240    14  0.0  3.98435E-05  293.0  end
pu-241    14  0.0  2.48695E-05  293.0  end
pu-242    14  0.0  6.25093E-06  293.0  end
am-241    14  0.0  6.04673E-07  293.0  end
am-243    14  0.0  8.89528E-07  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  3.26208E-05  293.0  end
tc-99     15  0.0  3.88633E-05  293.0  end
ru-101    15  0.0  3.66334E-05  293.0  end
rh-103    15  0.0  1.95056E-05  293.0  end
ag-109    15  0.0  2.52149E-06  293.0  end
cs-133    15  0.0  4.03024E-05  293.0  end
nd-143    15  0.0  2.94693E-05  293.0  end
nd-145    15  0.0  2.34409E-05  293.0  end
sm-147    15  0.0  2.04581E-06  293.0  end
sm-149    15  0.0  1.04818E-07  293.0  end
sm-150    15  0.0  9.08430E-06  293.0  end
sm-151    15  0.0  5.08550E-07  293.0  end
sm-152    15  0.0  3.88868E-06  293.0  end
eu-153    15  0.0  3.24470E-06  293.0  end
gd-155    15  0.0  9.96413E-10  293.0  end
u-234     15  0.0  5.26210E-06  293.0  end
u-235     15  0.0  3.68717E-04  293.0  end
u-236     15  0.0  9.84635E-05  293.0  end
u-238     15  0.0  2.15906E-02  293.0  end
np-237    15  0.0  7.76651E-06  293.0  end
pu-238    15  0.0  1.87619E-06  293.0  end
pu-239    15  0.0  1.29853E-04  293.0  end
pu-240    15  0.0  3.79097E-05  293.0  end
pu-241    15  0.0  2.34701E-05  293.0  end
pu-242    15  0.0  5.51600E-06  293.0  end
am-241    15  0.0  5.50895E-07  293.0  end
am-243    15  0.0  7.45982E-07  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  2.99195E-05  293.0  end
tc-99     16  0.0  3.62688E-05  293.0  end
ru-101    16  0.0  3.39560E-05  293.0  end
rh-103    16  0.0  1.81361E-05  293.0  end
ag-109    16  0.0  2.24298E-06  293.0  end
cs-133    16  0.0  3.76852E-05  293.0  end
nd-143    16  0.0  2.78782E-05  293.0  end
nd-145    16  0.0  2.19504E-05  293.0  end
sm-147    16  0.0  1.84561E-06  293.0  end
sm-149    16  0.0  1.05235E-07  293.0  end
sm-150    16  0.0  8.35010E-06  293.0  end
sm-151    16  0.0  4.94038E-07  293.0  end
sm-152    16  0.0  3.63625E-06  293.0  end
eu-153    16  0.0  2.90044E-06  293.0  end
gd-155    16  0.0  8.74616E-10  293.0  end
u-234     16  0.0  5.44532E-06  293.0  end
u-235     16  0.0  3.98079E-04  293.0  end
u-236     16  0.0  9.41026E-05  293.0  end
u-238     16  0.0  2.16255E-02  293.0  end
np-237    16  0.0  6.96587E-06  293.0  end
pu-238    16  0.0  1.54255E-06  293.0  end
pu-239    16  0.0  1.27582E-04  293.0  end
pu-240    16  0.0  3.50137E-05  293.0  end
pu-241    16  0.0  2.13511E-05  293.0  end
pu-242    16  0.0  4.53056E-06  293.0  end
am-241    16  0.0  4.73250E-07  293.0  end
am-243    16  0.0  5.65454E-07  293.0  end
o         16  0.0  4.58960E-02  293.0  end
nd-145    14  0.0  3.70878E-05  293.0  end
sm-147    14  0.0  3.71195E-06  293.0  end
sm-149    14  0.0  9.22134E-08  293.0  end
sm-150    14  0.0  1.64405E-05  293.0  end
sm-151    14  0.0  6.25396E-07  293.0  end
sm-152    14  0.0  6.15690E-06  293.0  end
eu-153    14  0.0  7.06000E-06  293.0  end
gd-155    14  0.0  2.72474E-09  293.0  end
u-234     14  0.0  3.53182E-06  293.0  end
u-235     14  0.0  1.43388E-04  293.0  end
u-236     14  0.0  1.25122E-04  293.0  end
u-238     14  0.0  2.11834E-02  293.0  end
np-237    14  0.0  1.58527E-05  293.0  end
pu-238    14  0.0  7.48969E-06  293.0  end
pu-239    14  0.0  1.33284E-04  293.0  end
pu-240    14  0.0  6.06508E-05  293.0  end
pu-241    14  0.0  3.81956E-05  293.0  end
pu-242    14  0.0  2.09077E-05  293.0  end
am-241    14  0.0  1.18227E-06  293.0  end
am-243    14  0.0  4.56963E-06  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  5.59766E-05  293.0  end
tc-99     15  0.0  6.11354E-05  293.0  end
ru-101    15  0.0  6.17305E-05  293.0  end
rh-103    15  0.0  3.01438E-05  293.0  end
ag-109    15  0.0  5.41006E-06  293.0  end
cs-133    15  0.0  6.19087E-05  293.0  end
nd-143    15  0.0  3.96147E-05  293.0  end
nd-145    15  0.0  3.58942E-05  293.0  end
sm-147    15  0.0  3.59443E-06  293.0  end
sm-149    15  0.0  9.35183E-08  293.0  end
sm-150    15  0.0  1.57616E-05  293.0  end
sm-151    15  0.0  6.15679E-07  293.0  end
sm-152    15  0.0  5.96088E-06  293.0  end
eu-153    15  0.0  6.68553E-06  293.0  end
gd-155    15  0.0  2.51946E-09  293.0  end
u-234     15  0.0  3.68665E-06  293.0  end
u-235     15  0.0  1.59551E-04  293.0  end
u-236     15  0.0  1.23904E-04  293.0  end
u-238     15  0.0  2.12279E-02  293.0  end
np-237    15  0.0  1.51594E-05  293.0  end
pu-238    15  0.0  6.79175E-06  293.0  end
pu-239    15  0.0  1.33837E-04  293.0  end
pu-240    15  0.0  5.90808E-05  293.0  end
pu-241    15  0.0  3.73309E-05  293.0  end
pu-242    15  0.0  1.90485E-05  293.0  end
am-241    15  0.0  1.14652E-06  293.0  end
am-243    15  0.0  4.03851E-06  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  5.23242E-05  293.0  end
tc-99     16  0.0  5.76858E-05  293.0  end
ru-101    16  0.0  5.75451E-05  293.0  end
rh-103    16  0.0  2.86662E-05  293.0  end
ag-109    16  0.0  4.90848E-06  293.0  end
cs-133    16  0.0  5.86844E-05  293.0  end
nd-143    16  0.0  3.85167E-05  293.0  end
nd-145    16  0.0  3.40075E-05  293.0  end
sm-147    16  0.0  3.39266E-06  293.0  end
sm-149    16  0.0  9.58510E-08  293.0  end
sm-150    16  0.0  1.46999E-05  293.0  end
sm-151    16  0.0  6.00904E-07  293.0  end
sm-152    16  0.0  5.64916E-06  293.0  end
eu-153    16  0.0  6.10788E-06  293.0  end
gd-155    16  0.0  2.22590E-09  293.0  end
u-234     16  0.0  3.93006E-06  293.0  end
u-235     16  0.0  1.86627E-04  293.0  end
u-236     16  0.0  1.21491E-04  293.0  end
u-238     16  0.0  2.12937E-02  293.0  end
np-237    16  0.0  1.40001E-05  293.0  end
pu-238    16  0.0  5.77184E-06  293.0  end
pu-239    16  0.0  1.34521E-04  293.0  end
pu-240    16  0.0  5.63694E-05  293.0  end
pu-241    16  0.0  3.58101E-05  293.0  end
pu-242    16  0.0  1.63183E-05  293.0  end
am-241    16  0.0  1.07879E-06  293.0  end
am-243    16  0.0  3.29464E-06  293.0  end
o         16  0.0  4.58960E-02  293.0  end
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mo-95     17  0.0  2.55024E-05  293.0  end
tc-99     17  0.0  3.20226E-05  293.0  end
ru-101    17  0.0  2.96603E-05  293.0  end
rh-103    17  0.0  1.58586E-05  293.0  end
ag-109    17  0.0  1.81599E-06  293.0  end
cs-133    17  0.0  3.33671E-05  293.0  end
nd-143    17  0.0  2.51233E-05  293.0  end
nd-145    17  0.0  1.94933E-05  293.0  end
sm-147    17  0.0  1.52096E-06  293.0  end
sm-149    17  0.0  1.05319E-07  293.0  end
sm-150    17  0.0  7.17686E-06  293.0  end
sm-151    17  0.0  4.69348E-07  293.0  end
sm-152    17  0.0  3.21675E-06  293.0  end
eu-153    17  0.0  2.36941E-06  293.0  end
gd-155    17  0.0  6.99396E-10  293.0  end
u-234     17  0.0  5.74484E-06  293.0  end
u-235     17  0.0  4.48304E-04  293.0  end
u-236     17  0.0  8.63882E-05  293.0  end
u-238     17  0.0  2.16799E-02  293.0  end
np-237    17  0.0  5.70675E-06  293.0  end
pu-238    17  0.0  1.08656E-06  293.0  end
pu-239    17  0.0  1.22672E-04  293.0  end
pu-240    17  0.0  3.01727E-05  293.0  end
pu-241    17  0.0  1.77719E-05  293.0  end
pu-242    17  0.0  3.15687E-06  293.0  end
am-241    17  0.0  3.53101E-07  293.0  end
am-243    17  0.0  3.40169E-07  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  1.76069E-05  293.0  end
tc-99     18  0.0  2.44029E-05  293.0  end
ru-101    18  0.0  2.22017E-05  293.0  end
rh-103    18  0.0  1.16905E-05  293.0  end
ag-109    18  0.0  1.14486E-06  293.0  end
cs-133    18  0.0  2.55237E-05  293.0  end
nd-143    18  0.0  1.97398E-05  293.0  end
nd-145    18  0.0  1.50279E-05  293.0  end
sm-147    18  0.0  9.68662E-07  293.0  end
sm-149    18  0.0  1.03353E-07  293.0  end
sm-150    18  0.0  5.17314E-06  293.0  end
sm-151    18  0.0  4.22030E-07  293.0  end
sm-152    18  0.0  2.44169E-06  293.0  end
eu-153    18  0.0  1.52808E-06  293.0  end
gd-155    18  0.0  4.55941E-10  293.0  end
u-234     18  0.0  6.28093E-06  293.0  end
u-235     18  0.0  5.45227E-04  293.0  end
u-236     18  0.0  7.07423E-05  293.0  end
u-238     18  0.0  2.17696E-02  293.0  end
np-237    18  0.0  3.67141E-06  293.0  end
pu-238    18  0.0  5.13379E-07  293.0  end
pu-239    18  0.0  1.09458E-04  293.0  end
pu-240    18  0.0  2.13488E-05  293.0  end
pu-241    18  0.0  1.13060E-05  293.0  end
pu-242    18  0.0  1.39242E-06  293.0  end
am-241    18  0.0  1.73488E-07  293.0  end
am-243    18  0.0  1.08363E-07  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  3.63740E-06  293.0  end
tc-99     19  0.0  9.66639E-06  293.0  end
ru-101    19  0.0  8.58094E-06  293.0  end
rh-103    19  0.0  3.64490E-06  293.0  end
ag-109    19  0.0  2.39595E-07  293.0  end
cs-133    19  0.0  1.00696E-05  293.0  end
nd-143    19  0.0  7.87013E-06  293.0  end
nd-145    19  0.0  6.16638E-06  293.0  end
sm-147    19  0.0  1.70382E-07  293.0  end
sm-149    19  0.0  8.96104E-08  293.0  end
sm-150    19  0.0  1.75992E-06  293.0  end
sm-151    19  0.0  3.01519E-07  293.0  end
sm-152    19  0.0  8.68379E-07  293.0  end
eu-153    19  0.0  3.79116E-07  293.0  end
gd-155    19  0.0  1.87351E-10  293.0  end
u-234     19  0.0  7.31229E-06  293.0  end
u-235     19  0.0  7.59727E-04  293.0  end
u-236     19  0.0  3.36570E-05  293.0  end
u-238     19  0.0  2.19226E-02  293.0  end
np-237    19  0.0  8.67617E-07  293.0  end
pu-238    19  0.0  4.56514E-08  293.0  end
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mo-95     17  0.0  4.65569E-05  293.0  end
tc-99     17  0.0  5.22062E-05  293.0  end
ru-101    17  0.0  5.11495E-05  293.0  end
rh-103    17  0.0  2.61716E-05  293.0  end
ag-109    17  0.0  4.15057E-06  293.0  end
cs-133    17  0.0  5.34588E-05  293.0  end
nd-143    17  0.0  3.63853E-05  293.0  end
nd-145    17  0.0  3.09781E-05  293.0  end
sm-147    17  0.0  3.03533E-06  293.0  end
sm-149    17  0.0  9.92769E-08  293.0  end
sm-150    17  0.0  1.30259E-05  293.0  end
sm-151    17  0.0  5.76253E-07  293.0  end
sm-152    17  0.0  5.14759E-06  293.0  end
eu-153    17  0.0  5.21793E-06  293.0  end
gd-155    17  0.0  1.80414E-09  293.0  end
u-234     17  0.0  4.31779E-06  293.0  end
u-235     17  0.0  2.33815E-04  293.0  end
u-236     17  0.0  1.16441E-04  293.0  end
u-238     17  0.0  2.13901E-02  293.0  end
np-237    17  0.0  1.21430E-05  293.0  end
pu-238    17  0.0  4.35058E-06  293.0  end
pu-239    17  0.0  1.34861E-04  293.0  end
pu-240    17  0.0  5.15750E-05  293.0  end
pu-241    17  0.0  3.28873E-05  293.0  end
pu-242    17  0.0  1.24681E-05  293.0  end
am-241    17  0.0  9.45989E-07  293.0  end
am-243    17  0.0  2.30830E-06  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  3.50953E-05  293.0  end
tc-99     18  0.0  4.12389E-05  293.0  end
ru-101    18  0.0  3.91233E-05  293.0  end
rh-103    18  0.0  2.07417E-05  293.0  end
ag-109    18  0.0  2.78783E-06  293.0  end
cs-133    18  0.0  4.26833E-05  293.0  end
nd-143    18  0.0  3.08607E-05  293.0  end
nd-145    18  0.0  2.47994E-05  293.0  end
sm-147    18  0.0  2.22874E-06  293.0  end
sm-149    18  0.0  1.04223E-07  293.0  end
sm-150    18  0.0  9.76708E-06  293.0  end
sm-151    18  0.0  5.21459E-07  293.0  end
sm-152    18  0.0  4.11733E-06  293.0  end
eu-153    18  0.0  3.57230E-06  293.0  end
gd-155    18  0.0  1.11792E-09  293.0  end
u-234     18  0.0  5.09418E-06  293.0  end
u-235     18  0.0  3.42706E-04  293.0  end
u-236     18  0.0  1.02218E-04  293.0  end
u-238     18  0.0  2.15582E-02  293.0  end
np-237    18  0.0  8.51755E-06  293.0  end
pu-238    18  0.0  2.22102E-06  293.0  end
pu-239    18  0.0  1.31508E-04  293.0  end
pu-240    18  0.0  4.05066E-05  293.0  end
pu-241    18  0.0  2.53462E-05  293.0  end
pu-242    18  0.0  6.51847E-06  293.0  end
am-241    18  0.0  6.23437E-07  293.0  end
am-243    18  0.0  9.43518E-07  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  1.09471E-05  293.0  end
tc-99     19  0.0  1.78277E-05  293.0  end
ru-101    19  0.0  1.59992E-05  293.0  end
rh-103    19  0.0  8.05884E-06  293.0  end
ag-109    19  0.0  6.72020E-07  293.0  end
cs-133    19  0.0  1.86689E-05  293.0  end
nd-143    19  0.0  1.46732E-05  293.0  end
nd-145    19  0.0  1.11131E-05  293.0  end
sm-147    19  0.0  5.53431E-07  293.0  end
sm-149    19  0.0  9.90475E-08  293.0  end
sm-150    19  0.0  3.56636E-06  293.0  end
sm-151    19  0.0  3.76883E-07  293.0  end
sm-152    19  0.0  1.74805E-06  293.0  end
eu-153    19  0.0  9.31624E-07  293.0  end
gd-155    19  0.0  3.10408E-10  293.0  end
u-234     19  0.0  6.74208E-06  293.0  end
u-235     19  0.0  6.36218E-04  293.0  end
u-236     19  0.0  5.53385E-05  293.0  end
u-238     19  0.0  2.18416E-02  293.0  end
np-237    19  0.0  2.21356E-06  293.0  end
pu-238    19  0.0  2.21893E-07  293.0  end
```

```
 pu-239   19  0.0  6.05721E-05  293.0  end
 pu-240   19  0.0  5.53029E-06  293.0  end
 pu-241   19  0.0  1.57134E-06  293.0  end
 pu-242   19  0.0  6.39546E-08  293.0  end
 am-241   19  0.0  9.30029E-09  293.0  end
 am-243   19  0.0  1.68067E-09  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
 mo-95    20  0.0  3.60489E-06  293.0  end
 tc-99    20  0.0  9.62205E-06  293.0  end
 ru-101   20  0.0  8.62330E-06  293.0  end
 rh-103   20  0.0  3.72052E-06  293.0  end
 ag-109   20  0.0  2.80964E-07  293.0  end
 cs-133   20  0.0  1.00124E-05  293.0  end
 nd-143   20  0.0  7.82217E-06  293.0  end
 nd-145   20  0.0  6.11608E-06  293.0  end
 sm-147   20  0.0  1.66025E-07  293.0  end
 sm-149   20  0.0  1.12591E-07  293.0  end
 sm-150   20  0.0  1.77893E-06  293.0  end
 sm-151   20  0.0  3.39708E-07  293.0  end
 sm-152   20  0.0  8.48281E-07  293.0  end
 eu-153   20  0.0  4.06906E-07  293.0  end
 gd-155   20  0.0  2.38783E-10  293.0  end
 u-234    20  0.0  7.18904E-06  293.0  end
 u-235    20  0.0  7.63846E-04  293.0  end
 u-236    20  0.0  3.50434E-05  293.0  end
 u-238    20  0.0  2.18987E-02  293.0  end
 np-237   20  0.0  1.12639E-06  293.0  end
 pu-238   20  0.0  6.67749E-08  293.0  end
 pu-239   20  0.0  7.78525E-05  293.0  end
 pu-240   20  0.0  6.56349E-06  293.0  end
 pu-241   20  0.0  2.16806E-06  293.0  end
 pu-242   20  0.0  8.57529E-08  293.0  end
 am-241   20  0.0  1.30160E-08  293.0  end
 am-243   20  0.0  2.92719E-09  293.0  end
 o        20  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id00522_b30.mip

```
pu-239   19  0.0  9.22368E-05  293.0  end
pu-240   19  0.0  1.38843E-05  293.0  end
pu-241   19  0.0  6.19968E-06  293.0  end
pu-242   19  0.0  5.14053E-07  293.0  end
am-241   19  0.0  6.92533E-08  293.0  end
am-243   19  0.0  2.74760E-08  293.0  end
o        19  0.0  4.58960E-02  293.0  end
mo-95    20  0.0  1.07992E-05  293.0  end
tc-99    20  0.0  1.76762E-05  293.0  end
ru-101   20  0.0  1.60668E-05  293.0  end
rh-103   20  0.0  8.25125E-06  293.0  end
ag-109   20  0.0  7.75062E-07  293.0  end
cs-133   20  0.0  1.84718E-05  293.0  end
nd-143   20  0.0  1.46035E-05  293.0  end
nd-145   20  0.0  1.09672E-05  293.0  end
sm-147   20  0.0  5.27112E-07  293.0  end
sm-149   20  0.0  1.31370E-07  293.0  end
sm-150   20  0.0  3.63945E-06  293.0  end
sm-151   20  0.0  4.57408E-07  293.0  end
sm-152   20  0.0  1.69108E-06  293.0  end
eu-153   20  0.0  1.00906E-06  293.0  end
gd-155   20  0.0  4.44172E-10  293.0  end
u-234    20  0.0  6.53976E-06  293.0  end
u-235    20  0.0  6.47341E-04  293.0  end
u-236    20  0.0  5.69246E-05  293.0  end
u-238    20  0.0  2.17965E-02  293.0  end
np-237   20  0.0  2.86069E-06  293.0  end
pu-238   20  0.0  3.20752E-07  293.0  end
pu-239   20  0.0  1.20509E-04  293.0  end
pu-240   20  0.0  1.59776E-05  293.0  end
pu-241   20  0.0  8.15522E-06  293.0  end
pu-242   20  0.0  6.30115E-07  293.0  end
am-241   20  0.0  9.26971E-08  293.0  end
am-243   20  0.0  4.31533E-08  293.0  end
o        20  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííí
```

EOF File ed24_f01_id00522_b50.mip

File ed24_f01_id01045_b30.mip

lfd.Nr.:   1 aus sha_alf.mod

```
 mo-95     1  0.0  4.67069E-06  293.0  end
 tc-99     1  0.0  1.09863E-05  293.0  end
 ru-101    1  0.0  9.76043E-06  293.0  end
 rh-103    1  0.0  4.33782E-06  293.0  end
 ag-109    1  0.0  2.96840E-07  293.0  end
 cs-133    1  0.0  1.14667E-05  293.0  end
 nd-143    1  0.0  9.00927E-06  293.0  end
 nd-145    1  0.0  6.97408E-06  293.0  end
 sm-147    1  0.0  2.19762E-07  293.0  end
 sm-149    1  0.0  9.14633E-08  293.0  end
 sm-150    1  0.0  2.03663E-06  293.0  end
 sm-151    1  0.0  3.17012E-07  293.0  end
 sm-152    1  0.0  1.00990E-06  293.0  end
 eu-153    1  0.0  4.53614E-07  293.0  end
 gd-155    1  0.0  2.04788E-10  293.0  end
 u-234     1  0.0  7.22023E-06  293.0  end
 u-235     1  0.0  7.38873E-04  293.0  end
 u-236     1  0.0  3.73654E-05  293.0  end
 u-238     1  0.0  2.19107E-02  293.0  end
 np-237    1  0.0  1.05409E-06  293.0  end
 pu-238    1  0.0  6.33352E-08  293.0  end
 pu-239    1  0.0  6.66489E-05  293.0  end
 pu-240    1  0.0  6.76284E-06  293.0  end
 pu-241    1  0.0  2.13231E-06  293.0  end
 pu-242    1  0.0  1.00259E-07  293.0  end
 am-241    1  0.0  1.44253E-08  293.0  end
 am-243    1  0.0  3.04791E-09  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  2.12313E-05  293.0  end
```

File ed24_f01_id01045_b50.mip

lfd.Nr.:   2 aus sha_alf.mod

```
mo-95     1  0.0  1.26482E-05  293.0  end
tc-99     1  0.0  1.95368E-05  293.0  end
ru-101    1  0.0  1.75918E-05  293.0  end
rh-103    1  0.0  9.00247E-06  293.0  end
ag-109    1  0.0  7.84850E-07  293.0  end
cs-133    1  0.0  2.04575E-05  293.0  end
nd-143    1  0.0  1.60256E-05  293.0  end
nd-145    1  0.0  1.21365E-05  293.0  end
sm-147    1  0.0  6.53922E-07  293.0  end
sm-149    1  0.0  1.00426E-07  293.0  end
sm-150    1  0.0  3.97195E-06  293.0  end
sm-151    1  0.0  3.89219E-07  293.0  end
sm-152    1  0.0  1.93048E-06  293.0  end
eu-153    1  0.0  1.07424E-06  293.0  end
gd-155    1  0.0  3.43221E-10  293.0  end
u-234     1  0.0  6.62234E-06  293.0  end
u-235     1  0.0  6.11882E-04  293.0  end
u-236     1  0.0  5.95161E-05  293.0  end
u-238     1  0.0  2.18235E-02  293.0  end
np-237    1  0.0  2.56224E-06  293.0  end
pu-238    1  0.0  2.82537E-07  293.0  end
pu-239    1  0.0  9.73220E-05  293.0  end
pu-240    1  0.0  1.57889E-05  293.0  end
pu-241    1  0.0  7.44622E-06  293.0  end
pu-242    1  0.0  6.91114E-07  293.0  end
am-241    1  0.0  9.13615E-08  293.0  end
am-243    1  0.0  4.11972E-08  293.0  end
o         1  0.0  4.58960E-02  293.0  end
mo-95     2  0.0  3.98296E-05  293.0  end
```

```
tc-99      2  0.0  2.79087E-05  293.0  end
ru-101     2  0.0  2.55954E-05  293.0  end
rh-103     2  0.0  1.36186E-05  293.0  end
ag-109     2  0.0  1.43798E-06  293.0  end
cs-133     2  0.0  2.91472E-05  293.0  end
nd-143     2  0.0  2.22842E-05  293.0  end
nd-145     2  0.0  1.70912E-05  293.0  end
sm-147     2  0.0  1.21594E-06  293.0  end
sm-149     2  0.0  1.04634E-07  293.0  end
sm-150     2  0.0  6.07782E-06  293.0  end
sm-151     2  0.0  4.44308E-07  293.0  end
sm-152     2  0.0  2.80210E-06  293.0  end
eu-153     2  0.0  1.89643E-06  293.0  end
gd-155     2  0.0  5.57124E-10  293.0  end
u-234      2  0.0  6.03439E-06  293.0  end
u-235      2  0.0  4.99519E-04  293.0  end
u-236      2  0.0  7.82335E-05  293.0  end
u-238      2  0.0  2.17298E-02  293.0  end
np-237     2  0.0  4.56568E-06  293.0  end
pu-238     2  0.0  7.41492E-07  293.0  end
pu-239     2  0.0  1.16328E-04  293.0  end
pu-240     2  0.0  2.54122E-05  293.0  end
pu-241     2  0.0  1.42574E-05  293.0  end
pu-242     2  0.0  2.09726E-06  293.0  end
am-241     2  0.0  2.49228E-07  293.0  end
am-243     2  0.0  1.91755E-07  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  2.90427E-05  293.0  end
tc-99      3  0.0  3.54266E-05  293.0  end
ru-101     3  0.0  3.30957E-05  293.0  end
rh-103     3  0.0  1.76880E-05  293.0  end
ag-109     3  0.0  2.15539E-06  293.0  end
cs-133     3  0.0  3.68325E-05  293.0  end
nd-143     3  0.0  2.73465E-05  293.0  end
nd-145     3  0.0  2.14648E-05  293.0  end
sm-147     3  0.0  1.78074E-06  293.0  end
sm-149     3  0.0  1.05311E-07  293.0  end
sm-150     3  0.0  8.11454E-06  293.0  end
sm-151     3  0.0  4.89233E-07  293.0  end
sm-152     3  0.0  3.55372E-06  293.0  end
eu-153     3  0.0  2.79184E-06  293.0  end
gd-155     3  0.0  8.37506E-10  293.0  end
u-234      3  0.0  5.50475E-06  293.0  end
u-235      3  0.0  4.07826E-04  293.0  end
u-236      3  0.0  9.26287E-05  293.0  end
u-238      3  0.0  2.16368E-02  293.0  end
np-237     3  0.0  6.71084E-06  293.0  end
pu-238     3  0.0  1.44346E-06  293.0  end
pu-239     3  0.0  1.26732E-04  293.0  end
pu-240     3  0.0  3.40627E-05  293.0  end
pu-241     3  0.0  2.06501E-05  293.0  end
pu-242     3  0.0  4.23479E-06  293.0  end
am-241     3  0.0  4.48617E-07  293.0  end
am-243     3  0.0  5.14189E-07  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  3.66247E-05  293.0  end
tc-99      4  0.0  4.27056E-05  293.0  end
ru-101     4  0.0  4.06791E-05  293.0  end
rh-103     4  0.0  2.14951E-05  293.0  end
ag-109     4  0.0  2.95753E-06  293.0  end
cs-133     4  0.0  4.41455E-05  293.0  end
nd-143     4  0.0  3.16872E-05  293.0  end
nd-145     4  0.0  2.56340E-05  293.0  end
sm-147     4  0.0  2.34093E-06  293.0  end
sm-149     4  0.0  1.03755E-07  293.0  end
sm-150     4  0.0  1.01928E-05  293.0  end
sm-151     4  0.0  5.29238E-07  293.0  end
sm-152     4  0.0  4.25742E-06  293.0  end
eu-153     4  0.0  3.78002E-06  293.0  end
gd-155     4  0.0  1.19767E-09  293.0  end
u-234      4  0.0  4.99050E-06  293.0  end
u-235      4  0.0  3.27069E-04  293.0  end
u-236      4  0.0  1.04426E-04  293.0  end
u-238      4  0.0  2.15373E-02  293.0  end
np-237     4  0.0  8.98879E-06  293.0  end
pu-238     4  0.0  2.45348E-06  293.0  end
pu-239     4  0.0  1.32347E-04  293.0  end
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```
tc-99      2  0.0  4.57776E-05  293.0  end
ru-101     2  0.0  4.39881E-05  293.0  end
rh-103     2  0.0  2.30492E-05  293.0  end
ag-109     2  0.0  3.32577E-06  293.0  end
cs-133     2  0.0  4.71892E-05  293.0  end
nd-143     2  0.0  3.33345E-05  293.0  end
nd-145     2  0.0  2.73747E-05  293.0  end
sm-147     2  0.0  2.57287E-06  293.0  end
sm-149     2  0.0  1.02568E-07  293.0  end
sm-150     2  0.0  1.10964E-05  293.0  end
sm-151     2  0.0  5.45081E-07  293.0  end
sm-152     2  0.0  4.54846E-06  293.0  end
eu-153     2  0.0  4.22833E-06  293.0  end
gd-155     2  0.0  1.37673E-09  293.0  end
u-234      2  0.0  4.77306E-06  293.0  end
u-235      2  0.0  2.95379E-04  293.0  end
u-236      2  0.0  1.08742E-04  293.0  end
u-238      2  0.0  2.14917E-02  293.0  end
np-237     2  0.0  9.99246E-06  293.0  end
pu-238     2  0.0  2.99116E-06  293.0  end
pu-239     2  0.0  1.33676E-04  293.0  end
pu-240     2  0.0  4.52922E-05  293.0  end
pu-241     2  0.0  2.87132E-05  293.0  end
pu-242     2  0.0  8.70806E-06  293.0  end
am-241     2  0.0  7.61991E-07  293.0  end
am-243     2  0.0  1.41614E-06  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  5.06994E-05  293.0  end
tc-99      3  0.0  5.61459E-05  293.0  end
ru-101     3  0.0  5.57179E-05  293.0  end
rh-103     3  0.0  2.79821E-05  293.0  end
ag-109     3  0.0  4.69054E-06  293.0  end
cs-133     3  0.0  5.72281E-05  293.0  end
nd-143     3  0.0  3.79639E-05  293.0  end
nd-145     3  0.0  3.31608E-05  293.0  end
sm-147     3  0.0  3.29644E-06  293.0  end
sm-149     3  0.0  9.68565E-08  293.0  end
sm-150     3  0.0  1.42273E-05  293.0  end
sm-151     3  0.0  5.94146E-07  293.0  end
sm-152     3  0.0  5.50897E-06  293.0  end
eu-153     3  0.0  5.85408E-06  293.0  end
gd-155     3  0.0  2.10197E-09  293.0  end
u-234      3  0.0  4.03888E-06  293.0  end
u-235      3  0.0  1.99381E-04  293.0  end
u-236      3  0.0  1.20224E-04  293.0  end
u-238      3  0.0  2.13218E-02  293.0  end
np-237     3  0.0  1.34780E-05  293.0  end
pu-238     3  0.0  5.34761E-06  293.0  end
pu-239     3  0.0  1.34721E-04  293.0  end
pu-240     3  0.0  5.50798E-05  293.0  end
pu-241     3  0.0  3.50511E-05  293.0  end
pu-242     3  0.0  1.51762E-05  293.0  end
am-241     3  0.0  1.04439E-06  293.0  end
am-243     3  0.0  2.99423E-06  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  5.96712E-05  293.0  end
tc-99      4  0.0  6.46007E-05  293.0  end
ru-101     4  0.0  6.60785E-05  293.0  end
rh-103     4  0.0  3.15433E-05  293.0  end
ag-109     4  0.0  5.93158E-06  293.0  end
cs-133     4  0.0  6.50896E-05  293.0  end
nd-143     4  0.0  4.05165E-05  293.0  end
nd-145     4  0.0  3.77725E-05  293.0  end
sm-147     4  0.0  3.77541E-06  293.0  end
sm-149     4  0.0  9.15997E-08  293.0  end
sm-150     4  0.0  1.68313E-05  293.0  end
sm-151     4  0.0  6.31352E-07  293.0  end
sm-152     4  0.0  6.26848E-06  293.0  end
eu-153     4  0.0  7.27784E-06  293.0  end
gd-155     4  0.0  2.85189E-09  293.0  end
u-234      4  0.0  3.44279E-06  293.0  end
u-235      4  0.0  1.34474E-04  293.0  end
u-236      4  0.0  1.25700E-04  293.0  end
u-238      4  0.0  2.11573E-02  293.0  end
np-237     4  0.0  1.62253E-05  293.0  end
pu-238     4  0.0  7.90604E-06  293.0  end
pu-239     4  0.0  1.32944E-04  293.0  end
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pu-240    4  0.0  4.20805E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end
pu-239    5  0.0  1.33299E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end
pu-242    5  0.0  8.19047E-06  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  3.99245E-05  293.0  end
tc-99     6  0.0  4.58684E-05  293.0  end
ru-101    6  0.0  4.40871E-05  293.0  end
rh-103    6  0.0  2.30946E-05  293.0  end
ag-109    6  0.0  3.33693E-06  293.0  end
cs-133    6  0.0  4.72788E-05  293.0  end
nd-143    6  0.0  3.33814E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end
sm-147    7  0.0  2.60653E-06  293.0  end
sm-149    7  0.0  1.02369E-07  293.0  end
sm-150    7  0.0  1.12305E-05  293.0  end
sm-151    7  0.0  5.47362E-07  293.0  end
sm-152    7  0.0  4.59108E-06  293.0  end
eu-153    7  0.0  4.29579E-06  293.0  end
gd-155    7  0.0  1.40447E-09  293.0  end
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pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  8.76042E-06  293.0  end
pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  3.94419E-05  293.0  end
pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  5.58383E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  6.36571E-05  293.0  end
tc-99     6  0.0  6.83111E-05  293.0  end
ru-101    6  0.0  7.09080E-05  293.0  end
rh-103    6  0.0  3.29433E-05  293.0  end
ag-109    6  0.0  6.50953E-06  293.0  end
cs-133    6  0.0  6.84264E-05  293.0  end
nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  4.00320E-05  293.0  end
sm-147    7  0.0  3.96292E-06  293.0  end
sm-149    7  0.0  8.86158E-08  293.0  end
sm-150    7  0.0  1.81246E-05  293.0  end
sm-151    7  0.0  6.48610E-07  293.0  end
sm-152    7  0.0  6.64004E-06  293.0  end
eu-153    7  0.0  8.00504E-06  293.0  end
gd-155    7  0.0  3.27190E-09  293.0  end
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u-234     7  0.0  4.74102E-06  293.0  end
u-235     7  0.0  2.90831E-04  293.0  end
u-236     7  0.0  1.09344E-04  293.0  end
u-238     7  0.0  2.14850E-02  293.0  end
np-237    7  0.0  1.01420E-05  293.0  end
pu-238    7  0.0  3.07627E-06  293.0  end
pu-239    7  0.0  1.33828E-04  293.0  end
pu-240    7  0.0  4.57545E-05  293.0  end
pu-241    7  0.0  2.90311E-05  293.0  end
pu-242    7  0.0  8.94661E-06  293.0  end
am-241    7  0.0  7.75585E-07  293.0  end
am-243    7  0.0  1.47055E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  3.95792E-05  293.0  end
tc-99     8  0.0  4.55378E-05  293.0  end
ru-101    8  0.0  4.37271E-05  293.0  end
rh-103    8  0.0  2.29293E-05  293.0  end
ag-109    8  0.0  3.29641E-06  293.0  end
cs-133    8  0.0  4.69526E-05  293.0  end
nd-143    8  0.0  3.32102E-05  293.0  end
nd-145    8  0.0  2.72393E-05  293.0  end
sm-147    8  0.0  2.55497E-06  293.0  end
sm-149    8  0.0  1.02671E-07  293.0  end
sm-150    8  0.0  1.10254E-05  293.0  end
sm-151    8  0.0  5.43866E-07  293.0  end
sm-152    8  0.0  4.52584E-06  293.0  end
eu-153    8  0.0  4.19271E-06  293.0  end
gd-155    8  0.0  1.36216E-09  293.0  end
u-234     8  0.0  4.79005E-06  293.0  end
u-235     8  0.0  2.97803E-04  293.0  end
u-236     8  0.0  1.08419E-04  293.0  end
u-238     8  0.0  2.14952E-02  293.0  end
np-237    8  0.0  9.91337E-06  293.0  end
pu-238    8  0.0  2.94667E-06  293.0  end
pu-239    8  0.0  1.33592E-04  293.0  end
pu-240    8  0.0  4.50459E-05  293.0  end
pu-241    8  0.0  2.85432E-05  293.0  end
pu-242    8  0.0  8.58315E-06  293.0  end
am-241    8  0.0  7.54760E-07  293.0  end
am-243    8  0.0  1.38782E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  3.85161E-05  293.0  end
tc-99     9  0.0  4.45193E-05  293.0  end
ru-101    9  0.0  4.26241E-05  293.0  end
rh-103    9  0.0  2.24167E-05  293.0  end
ag-109    9  0.0  3.17286E-06  293.0  end
cs-133    9  0.0  4.59459E-05  293.0  end
nd-143    9  0.0  3.26739E-05  293.0  end
nd-145    9  0.0  2.66628E-05  293.0  end
sm-147    9  0.0  2.47847E-06  293.0  end
sm-149    9  0.0  1.03087E-07  293.0  end
sm-150    9  0.0  1.07246E-05  293.0  end
sm-151    9  0.0  5.38669E-07  293.0  end
sm-152    9  0.0  4.42961E-06  293.0  end
eu-153    9  0.0  4.04254E-06  293.0  end
gd-155    9  0.0  1.30144E-09  293.0  end
u-234     9  0.0  4.86219E-06  293.0  end
u-235     9  0.0  3.08189E-04  293.0  end
u-236     9  0.0  1.07020E-04  293.0  end
u-238     9  0.0  2.15106E-02  293.0  end
np-237    9  0.0  9.57877E-06  293.0  end
pu-238    9  0.0  2.76242E-06  293.0  end
pu-239    9  0.0  1.33196E-04  293.0  end
pu-240    9  0.0  4.39911E-05  293.0  end
pu-241    9  0.0  2.78109E-05  293.0  end
pu-242    9  0.0  8.06416E-06  293.0  end
am-241    9  0.0  7.23880E-07  293.0  end
am-243    9  0.0  1.27181E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  3.77225E-05  293.0  end
tc-99    10  0.0  4.37585E-05  293.0  end
ru-101   10  0.0  4.18054E-05  293.0  end
rh-103   10  0.0  2.20313E-05  293.0  end
ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
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u-234     7  0.0  3.14936E-06  293.0  end
u-235     7  0.0  1.07033E-04  293.0  end
u-236     7  0.0  1.27003E-04  293.0  end
u-238     7  0.0  2.10638E-02  293.0  end
np-237    7  0.0  1.75686E-05  293.0  end
pu-238    7  0.0  9.36658E-06  293.0  end
pu-239    7  0.0  1.31543E-04  293.0  end
pu-240    7  0.0  6.41029E-05  293.0  end
pu-241    7  0.0  3.98988E-05  293.0  end
pu-242    7  0.0  2.59358E-05  293.0  end
am-241    7  0.0  1.24514E-06  293.0  end
am-243    7  0.0  6.08700E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  6.35416E-05  293.0  end
tc-99     8  0.0  6.82041E-05  293.0  end
ru-101    8  0.0  7.07660E-05  293.0  end
rh-103    8  0.0  3.29044E-05  293.0  end
ag-109    8  0.0  6.49260E-06  293.0  end
cs-133    8  0.0  6.83313E-05  293.0  end
nd-143    8  0.0  4.12258E-05  293.0  end
nd-145    8  0.0  3.97090E-05  293.0  end
sm-147    8  0.0  3.93831E-06  293.0  end
sm-149    8  0.0  8.90389E-08  293.0  end
sm-150    8  0.0  1.79393E-05  293.0  end
sm-151    8  0.0  6.46165E-07  293.0  end
sm-152    8  0.0  6.58693E-06  293.0  end
eu-153    8  0.0  7.90004E-06  293.0  end
gd-155    8  0.0  3.20910E-09  293.0  end
u-234     8  0.0  3.19131E-06  293.0  end
u-235     8  0.0  1.10770E-04  293.0  end
u-236     8  0.0  1.26880E-04  293.0  end
u-238     8  0.0  2.10779E-02  293.0  end
np-237    8  0.0  1.73813E-05  293.0  end
pu-238    8  0.0  9.14952E-06  293.0  end
pu-239    8  0.0  1.31758E-04  293.0  end
pu-240    8  0.0  6.37523E-05  293.0  end
pu-241    8  0.0  3.97436E-05  293.0  end
pu-242    8  0.0  2.53525E-05  293.0  end
am-241    8  0.0  1.24005E-06  293.0  end
am-243    8  0.0  5.90529E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  6.25017E-05  293.0  end
tc-99     9  0.0  6.72392E-05  293.0  end
ru-101    9  0.0  6.94929E-05  293.0  end
rh-103    9  0.0  3.25501E-05  293.0  end
ag-109    9  0.0  6.34060E-06  293.0  end
cs-133    9  0.0  6.74704E-05  293.0  end
nd-143    9  0.0  4.10587E-05  293.0  end
nd-145    9  0.0  3.91922E-05  293.0  end
sm-147    9  0.0  3.89739E-06  293.0  end
sm-149    9  0.0  8.97077E-08  293.0  end
sm-150    9  0.0  1.76431E-05  293.0  end
sm-151    9  0.0  6.42227E-07  293.0  end
sm-152    9  0.0  6.50205E-06  293.0  end
eu-153    9  0.0  7.73280E-06  293.0  end
gd-155    9  0.0  3.11030E-09  293.0  end
u-234     9  0.0  3.25841E-06  293.0  end
u-235     9  0.0  1.16875E-04  293.0  end
u-236     9  0.0  1.26635E-04  293.0  end
u-238     9  0.0  2.10999E-02  293.0  end
np-237    9  0.0  1.70808E-05  293.0  end
pu-238    9  0.0  8.80797E-06  293.0  end
pu-239    9  0.0  1.32088E-04  293.0  end
pu-240    9  0.0  6.31770E-05  293.0  end
pu-241    9  0.0  3.94804E-05  293.0  end
pu-242    9  0.0  2.44361E-05  293.0  end
am-241    9  0.0  1.23098E-06  293.0  end
am-243    9  0.0  5.62282E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  6.17218E-05  293.0  end
tc-99    10  0.0  6.65140E-05  293.0  end
ru-101   10  0.0  6.85447E-05  293.0  end
rh-103   10  0.0  3.22787E-05  293.0  end
ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
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sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
u-235    11  0.0  3.22255E-04  293.0  end
u-236    11  0.0  1.05095E-04  293.0  end
u-238    11  0.0  2.15307E-02  293.0  end
np-237   11  0.0  9.13701E-06  293.0  end
pu-238   11  0.0  2.52920E-06  293.0  end
pu-239   11  0.0  1.32580E-04  293.0  end
pu-240   11  0.0  4.25667E-05  293.0  end
pu-241   11  0.0  2.68115E-05  293.0  end
pu-242   11  0.0  7.40231E-06  293.0  end
am-241   11  0.0  6.82477E-07  293.0  end
am-243   11  0.0  1.12799E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  3.63734E-05  293.0  end
tc-99    12  0.0  4.24647E-05  293.0  end
ru-101   12  0.0  4.04227E-05  293.0  end
rh-103   12  0.0  2.13720E-05  293.0  end
ag-109   12  0.0  2.92939E-06  293.0  end
cs-133   12  0.0  4.39058E-05  293.0  end
nd-143   12  0.0  3.15532E-05  293.0  end
nd-145   12  0.0  2.54971E-05  293.0  end
sm-147   12  0.0  2.32256E-06  293.0  end
sm-149   12  0.0  1.03836E-07  293.0  end
sm-150   12  0.0  1.01227E-05  293.0  end
sm-151   12  0.0  5.27971E-07  293.0  end
sm-152   12  0.0  4.23447E-06  293.0  end
eu-153   12  0.0  3.74564E-06  293.0  end
gd-155   12  0.0  1.18433E-09  293.0  end
u-234    12  0.0  5.00751E-06  293.0  end
u-235    12  0.0  3.29615E-04  293.0  end
u-236    12  0.0  1.04069E-04  293.0  end
u-238    12  0.0  2.15407E-02  293.0  end
np-237   12  0.0  8.91104E-06  293.0  end
pu-238   12  0.0  2.41426E-06  293.0  end
pu-239   12  0.0  1.32218E-04  293.0  end
pu-240   12  0.0  4.18236E-05  293.0  end
pu-241   12  0.0  2.62856E-05  293.0  end
pu-242   12  0.0  7.07391E-06  293.0  end
am-241   12  0.0  6.61056E-07  293.0  end
am-243   12  0.0  1.05840E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  3.56166E-05  293.0  end
```

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sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
u-235    11  0.0  1.24735E-04  293.0  end
u-236    11  0.0  1.26254E-04  293.0  end
u-238    11  0.0  2.11266E-02  293.0  end
np-237   11  0.0  1.66955E-05  293.0  end
pu-238   11  0.0  8.39082E-06  293.0  end
pu-239   11  0.0  1.32485E-04  293.0  end
pu-240   11  0.0  6.24273E-05  293.0  end
pu-241   11  0.0  3.91285E-05  293.0  end
pu-242   11  0.0  2.33174E-05  293.0  end
am-241   11  0.0  1.21804E-06  293.0  end
am-243   11  0.0  5.28382E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  6.05774E-05  293.0  end
tc-99    12  0.0  6.54472E-05  293.0  end
ru-101   12  0.0  6.71636E-05  293.0  end
rh-103   12  0.0  3.18720E-05  293.0  end
ag-109   12  0.0  6.06172E-06  293.0  end
cs-133   12  0.0  6.58576E-05  293.0  end
nd-143   12  0.0  4.07041E-05  293.0  end
nd-145   12  0.0  3.82289E-05  293.0  end
sm-147   12  0.0  3.81610E-06  293.0  end
sm-149   12  0.0  9.10122E-08  293.0  end
sm-150   12  0.0  1.70919E-05  293.0  end
sm-151   12  0.0  6.34925E-07  293.0  end
sm-152   12  0.0  6.34352E-06  293.0  end
eu-153   12  0.0  7.42345E-06  293.0  end
gd-155   12  0.0  2.93373E-09  293.0  end
u-234    12  0.0  3.38349E-06  293.0  end
u-235    12  0.0  1.28685E-04  293.0  end
u-236    12  0.0  1.26040E-04  293.0  end
u-238    12  0.0  2.11393E-02  293.0  end
np-237   12  0.0  1.65004E-05  293.0  end
pu-238   12  0.0  8.19019E-06  293.0  end
pu-239   12  0.0  1.32679E-04  293.0  end
pu-240   12  0.0  6.20454E-05  293.0  end
pu-241   12  0.0  3.89470E-05  293.0  end
pu-242   12  0.0  2.27791E-05  293.0  end
am-241   12  0.0  1.21104E-06  293.0  end
am-243   12  0.0  5.12320E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  5.97211E-05  293.0  end
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tc-99     13  0.0  4.17389E-05  293.0  end
ru-101    13  0.0  3.96526E-05  293.0  end
rh-103    13  0.0  2.09998E-05  293.0  end
ag-109    13  0.0  2.84526E-06  293.0  end
cs-133    13  0.0  4.31827E-05  293.0  end
nd-143    13  0.0  3.11452E-05  293.0  end
nd-145    13  0.0  2.50844E-05  293.0  end
sm-147    13  0.0  2.26709E-06  293.0  end
sm-149    13  0.0  1.04070E-07  293.0  end
sm-150    13  0.0  9.91201E-06  293.0  end
sm-151    13  0.0  5.24130E-07  293.0  end
sm-152    13  0.0  4.16521E-06  293.0  end
eu-153    13  0.0  3.64271E-06  293.0  end
gd-155    13  0.0  1.14474E-09  293.0  end
u-234     13  0.0  5.05879E-06  293.0  end
u-235     13  0.0  3.37337E-04  293.0  end
u-236     13  0.0  1.02977E-04  293.0  end
u-238     13  0.0  2.15511E-02  293.0  end
np-237    13  0.0  8.67768E-06  293.0  end
pu-238    13  0.0  2.29860E-06  293.0  end
pu-239    13  0.0  1.31808E-04  293.0  end
pu-240    13  0.0  4.10458E-05  293.0  end
pu-241    13  0.0  2.57321E-05  293.0  end
pu-242    13  0.0  6.74198E-06  293.0  end
am-241    13  0.0  6.38790E-07  293.0  end
am-243    13  0.0  9.89299E-07  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  3.44576E-05  293.0  end
tc-99     14  0.0  4.06272E-05  293.0  end
ru-101    14  0.0  3.84781E-05  293.0  end
rh-103    14  0.0  2.04246E-05  293.0  end
ag-109    14  0.0  2.71820E-06  293.0  end
cs-133    14  0.0  4.20714E-05  293.0  end
nd-143    14  0.0  3.05087E-05  293.0  end
nd-145    14  0.0  2.44504E-05  293.0  end
sm-147    14  0.0  2.18173E-06  293.0  end
sm-149    14  0.0  1.04399E-07  293.0  end
sm-150    14  0.0  9.59030E-06  293.0  end
sm-151    14  0.0  5.18167E-07  293.0  end
sm-152    14  0.0  4.05863E-06  293.0  end
eu-153    14  0.0  3.48682E-06  293.0  end
gd-155    14  0.0  1.08567E-09  293.0  end
u-234     14  0.0  5.13750E-06  293.0  end
u-235     14  0.0  3.49325E-04  293.0  end
u-236     14  0.0  1.01275E-04  293.0  end
u-238     14  0.0  2.15669E-02  293.0  end
np-237    14  0.0  8.32254E-06  293.0  end
pu-238    14  0.0  2.12847E-06  293.0  end
pu-239    14  0.0  1.31120E-04  293.0  end
pu-240    14  0.0  3.98435E-05  293.0  end
pu-241    14  0.0  2.48695E-05  293.0  end
pu-242    14  0.0  6.25093E-06  293.0  end
am-241    14  0.0  6.04673E-07  293.0  end
am-243    14  0.0  8.89528E-07  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  3.26208E-05  293.0  end
tc-99     15  0.0  3.88633E-05  293.0  end
ru-101    15  0.0  3.66334E-05  293.0  end
rh-103    15  0.0  1.95056E-05  293.0  end
ag-109    15  0.0  2.52149E-06  293.0  end
cs-133    15  0.0  4.03024E-05  293.0  end
nd-143    15  0.0  2.94693E-05  293.0  end
nd-145    15  0.0  2.34409E-05  293.0  end
sm-147    15  0.0  2.04581E-06  293.0  end
sm-149    15  0.0  1.04818E-07  293.0  end
sm-150    15  0.0  9.08430E-06  293.0  end
sm-151    15  0.0  5.08550E-07  293.0  end
sm-152    15  0.0  3.88868E-06  293.0  end
eu-153    15  0.0  3.24470E-06  293.0  end
gd-155    15  0.0  9.96413E-10  293.0  end
u-234     15  0.0  5.26210E-06  293.0  end
u-235     15  0.0  3.68717E-04  293.0  end
u-236     15  0.0  9.84635E-05  293.0  end
u-238     15  0.0  2.15906E-02  293.0  end
np-237    15  0.0  7.76651E-06  293.0  end
pu-238    15  0.0  1.87619E-06  293.0  end
pu-239    15  0.0  1.29853E-04  293.0  end
```

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tc-99     13  0.0  6.46473E-05  293.0  end
ru-101    13  0.0  6.61380E-05  293.0  end
rh-103    13  0.0  3.15615E-05  293.0  end
ag-109    13  0.0  5.93872E-06  293.0  end
cs-133    13  0.0  6.51320E-05  293.0  end
nd-143    13  0.0  4.05272E-05  293.0  end
nd-145    13  0.0  3.77977E-05  293.0  end
sm-147    13  0.0  3.77769E-06  293.0  end
sm-149    13  0.0  9.15705E-08  293.0  end
sm-150    13  0.0  1.68457E-05  293.0  end
sm-151    13  0.0  6.31557E-07  293.0  end
sm-152    13  0.0  6.27260E-06  293.0  end
eu-153    13  0.0  7.28585E-06  293.0  end
gd-155    13  0.0  2.85644E-09  293.0  end
u-234     13  0.0  3.43952E-06  293.0  end
u-235     13  0.0  1.34152E-04  293.0  end
u-236     13  0.0  1.25719E-04  293.0  end
u-238     13  0.0  2.11563E-02  293.0  end
np-237    13  0.0  1.62400E-05  293.0  end
pu-238    13  0.0  7.92157E-06  293.0  end
pu-239    13  0.0  1.32930E-04  293.0  end
pu-240    13  0.0  6.15186E-05  293.0  end
pu-241    13  0.0  3.86844E-05  293.0  end
pu-242    13  0.0  2.20594E-05  293.0  end
am-241    13  0.0  1.20082E-06  293.0  end
am-243    13  0.0  4.90995E-06  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  5.83173E-05  293.0  end
tc-99     14  0.0  6.33341E-05  293.0  end
ru-101    14  0.0  6.44712E-05  293.0  end
rh-103    14  0.0  3.10423E-05  293.0  end
ag-109    14  0.0  5.73898E-06  293.0  end
cs-133    14  0.0  6.39341E-05  293.0  end
nd-143    14  0.0  4.02110E-05  293.0  end
nd-145    14  0.0  3.70878E-05  293.0  end
sm-147    14  0.0  3.71195E-06  293.0  end
sm-149    14  0.0  9.22134E-08  293.0  end
sm-150    14  0.0  1.64405E-05  293.0  end
sm-151    14  0.0  6.25396E-07  293.0  end
sm-152    14  0.0  6.15690E-06  293.0  end
eu-153    14  0.0  7.06000E-06  293.0  end
gd-155    14  0.0  2.72474E-09  293.0  end
u-234     14  0.0  3.53182E-06  293.0  end
u-235     14  0.0  1.43388E-04  293.0  end
u-236     14  0.0  1.25122E-04  293.0  end
u-238     14  0.0  2.11834E-02  293.0  end
np-237    14  0.0  1.58527E-05  293.0  end
pu-238    14  0.0  7.48969E-06  293.0  end
pu-239    14  0.0  1.33284E-04  293.0  end
pu-240    14  0.0  6.06508E-05  293.0  end
pu-241    14  0.0  3.81956E-05  293.0  end
pu-242    14  0.0  2.09077E-05  293.0  end
am-241    14  0.0  1.18227E-06  293.0  end
am-243    14  0.0  4.56963E-06  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  5.59766E-05  293.0  end
tc-99     15  0.0  6.11354E-05  293.0  end
ru-101    15  0.0  6.17305E-05  293.0  end
rh-103    15  0.0  3.01438E-05  293.0  end
ag-109    15  0.0  5.41006E-06  293.0  end
cs-133    15  0.0  6.19087E-05  293.0  end
nd-143    15  0.0  3.96147E-05  293.0  end
nd-145    15  0.0  3.58942E-05  293.0  end
sm-147    15  0.0  3.59443E-06  293.0  end
sm-149    15  0.0  9.35183E-08  293.0  end
sm-150    15  0.0  1.57616E-05  293.0  end
sm-151    15  0.0  6.15679E-07  293.0  end
sm-152    15  0.0  5.96088E-06  293.0  end
eu-153    15  0.0  6.68553E-06  293.0  end
gd-155    15  0.0  2.51946E-09  293.0  end
u-234     15  0.0  3.68665E-06  293.0  end
u-235     15  0.0  1.59551E-04  293.0  end
u-236     15  0.0  1.23904E-04  293.0  end
u-238     15  0.0  2.12279E-02  293.0  end
np-237    15  0.0  1.51594E-05  293.0  end
pu-238    15  0.0  6.79175E-06  293.0  end
pu-239    15  0.0  1.33837E-04  293.0  end
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pu-240    15  0.0  3.79097E-05  293.0  end
pu-241    15  0.0  2.34701E-05  293.0  end
pu-242    15  0.0  5.51600E-06  293.0  end
am-241    15  0.0  5.50895E-07  293.0  end
am-243    15  0.0  7.45982E-07  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  2.99195E-05  293.0  end
tc-99     16  0.0  3.62688E-05  293.0  end
ru-101    16  0.0  3.39560E-05  293.0  end
rh-103    16  0.0  1.81361E-05  293.0  end
ag-109    16  0.0  2.24298E-06  293.0  end
cs-133    16  0.0  3.76852E-05  293.0  end
nd-143    16  0.0  2.78782E-05  293.0  end
nd-145    16  0.0  2.19504E-05  293.0  end
sm-147    16  0.0  1.84561E-06  293.0  end
sm-149    16  0.0  1.05235E-07  293.0  end
sm-150    16  0.0  8.35010E-06  293.0  end
sm-151    16  0.0  4.94038E-07  293.0  end
sm-152    16  0.0  3.63625E-06  293.0  end
eu-153    16  0.0  2.90044E-06  293.0  end
gd-155    16  0.0  8.74616E-10  293.0  end
u-234     16  0.0  5.44532E-06  293.0  end
u-235     16  0.0  3.98079E-04  293.0  end
u-236     16  0.0  9.41026E-05  293.0  end
u-238     16  0.0  2.16255E-02  293.0  end
np-237    16  0.0  6.96587E-06  293.0  end
pu-238    16  0.0  1.54255E-06  293.0  end
pu-239    16  0.0  1.27582E-04  293.0  end
pu-240    16  0.0  3.50137E-05  293.0  end
pu-241    16  0.0  2.13511E-05  293.0  end
pu-242    16  0.0  4.53056E-06  293.0  end
am-241    16  0.0  4.73250E-07  293.0  end
am-243    16  0.0  5.65454E-07  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  2.55024E-05  293.0  end
tc-99     17  0.0  3.20226E-05  293.0  end
ru-101    17  0.0  2.96603E-05  293.0  end
rh-103    17  0.0  1.58586E-05  293.0  end
ag-109    17  0.0  1.81599E-06  293.0  end
cs-133    17  0.0  3.33671E-05  293.0  end
nd-143    17  0.0  2.51233E-05  293.0  end
nd-145    17  0.0  1.94933E-05  293.0  end
sm-147    17  0.0  1.52096E-06  293.0  end
sm-149    17  0.0  1.05319E-07  293.0  end
sm-150    17  0.0  7.17686E-06  293.0  end
sm-151    17  0.0  4.69348E-07  293.0  end
sm-152    17  0.0  3.21675E-06  293.0  end
eu-153    17  0.0  2.36941E-06  293.0  end
gd-155    17  0.0  6.99396E-10  293.0  end
u-234     17  0.0  5.74484E-06  293.0  end
u-235     17  0.0  4.48304E-04  293.0  end
u-236     17  0.0  8.63882E-05  293.0  end
u-238     17  0.0  2.16799E-02  293.0  end
np-237    17  0.0  5.70675E-06  293.0  end
pu-238    17  0.0  1.08656E-06  293.0  end
pu-239    17  0.0  1.22672E-04  293.0  end
pu-240    17  0.0  3.01727E-05  293.0  end
pu-241    17  0.0  1.77719E-05  293.0  end
pu-242    17  0.0  3.15687E-06  293.0  end
am-241    17  0.0  3.53101E-07  293.0  end
am-243    17  0.0  3.40169E-07  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  1.76069E-05  293.0  end
tc-99     18  0.0  2.44029E-05  293.0  end
ru-101    18  0.0  2.22017E-05  293.0  end
rh-103    18  0.0  1.16905E-05  293.0  end
ag-109    18  0.0  1.14486E-06  293.0  end
cs-133    18  0.0  2.55237E-05  293.0  end
nd-143    18  0.0  1.97398E-05  293.0  end
nd-145    18  0.0  1.50279E-05  293.0  end
sm-147    18  0.0  9.68662E-07  293.0  end
sm-149    18  0.0  1.03353E-07  293.0  end
sm-150    18  0.0  5.17314E-06  293.0  end
sm-151    18  0.0  4.22030E-07  293.0  end
sm-152    18  0.0  2.44169E-06  293.0  end
eu-153    18  0.0  1.52808E-06  293.0  end
gd-155    18  0.0  4.55941E-10  293.0  end
```

```
pu-240    15  0.0  5.90808E-05  293.0  end
pu-241    15  0.0  3.73309E-05  293.0  end
pu-242    15  0.0  1.90485E-05  293.0  end
am-241    15  0.0  1.14652E-06  293.0  end
am-243    15  0.0  4.03851E-06  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  5.23242E-05  293.0  end
tc-99     16  0.0  5.76858E-05  293.0  end
ru-101    16  0.0  5.75451E-05  293.0  end
rh-103    16  0.0  2.86662E-05  293.0  end
ag-109    16  0.0  4.90848E-06  293.0  end
cs-133    16  0.0  5.86844E-05  293.0  end
nd-143    16  0.0  3.85167E-05  293.0  end
nd-145    16  0.0  3.40075E-05  293.0  end
sm-147    16  0.0  3.39266E-06  293.0  end
sm-149    16  0.0  9.58510E-08  293.0  end
sm-150    16  0.0  1.46999E-05  293.0  end
sm-151    16  0.0  6.00904E-07  293.0  end
sm-152    16  0.0  5.64916E-06  293.0  end
eu-153    16  0.0  6.10788E-06  293.0  end
gd-155    16  0.0  2.22590E-09  293.0  end
u-234     16  0.0  3.93006E-06  293.0  end
u-235     16  0.0  1.86627E-04  293.0  end
u-236     16  0.0  1.21491E-04  293.0  end
u-238     16  0.0  2.12937E-02  293.0  end
np-237    16  0.0  1.40001E-05  293.0  end
pu-238    16  0.0  5.77184E-06  293.0  end
pu-239    16  0.0  1.34521E-04  293.0  end
pu-240    16  0.0  5.63694E-05  293.0  end
pu-241    16  0.0  3.58101E-05  293.0  end
pu-242    16  0.0  1.63183E-05  293.0  end
am-241    16  0.0  1.07879E-06  293.0  end
am-243    16  0.0  3.29464E-06  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  4.65569E-05  293.0  end
tc-99     17  0.0  5.22062E-05  293.0  end
ru-101    17  0.0  5.11495E-05  293.0  end
rh-103    17  0.0  2.61716E-05  293.0  end
ag-109    17  0.0  4.15057E-06  293.0  end
cs-133    17  0.0  5.34588E-05  293.0  end
nd-143    17  0.0  3.63853E-05  293.0  end
nd-145    17  0.0  3.09781E-05  293.0  end
sm-147    17  0.0  3.03533E-06  293.0  end
sm-149    17  0.0  9.92769E-08  293.0  end
sm-150    17  0.0  1.30259E-05  293.0  end
sm-151    17  0.0  5.76253E-07  293.0  end
sm-152    17  0.0  5.14759E-06  293.0  end
eu-153    17  0.0  5.21793E-06  293.0  end
gd-155    17  0.0  1.80414E-09  293.0  end
u-234     17  0.0  4.31779E-06  293.0  end
u-235     17  0.0  2.33815E-04  293.0  end
u-236     17  0.0  1.16441E-04  293.0  end
u-238     17  0.0  2.13901E-02  293.0  end
np-237    17  0.0  1.21430E-05  293.0  end
pu-238    17  0.0  4.35058E-06  293.0  end
pu-239    17  0.0  1.34861E-04  293.0  end
pu-240    17  0.0  5.15750E-05  293.0  end
pu-241    17  0.0  3.28873E-05  293.0  end
pu-242    17  0.0  1.24681E-05  293.0  end
am-241    17  0.0  9.45989E-07  293.0  end
am-243    17  0.0  2.30830E-06  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  3.50953E-05  293.0  end
tc-99     18  0.0  4.12389E-05  293.0  end
ru-101    18  0.0  3.91233E-05  293.0  end
rh-103    18  0.0  2.07417E-05  293.0  end
ag-109    18  0.0  2.78783E-06  293.0  end
cs-133    18  0.0  4.26833E-05  293.0  end
nd-143    18  0.0  3.08607E-05  293.0  end
nd-145    18  0.0  2.47994E-05  293.0  end
sm-147    18  0.0  2.22874E-06  293.0  end
sm-149    18  0.0  1.04223E-07  293.0  end
sm-150    18  0.0  9.76708E-06  293.0  end
sm-151    18  0.0  5.21459E-07  293.0  end
sm-152    18  0.0  4.11733E-06  293.0  end
eu-153    18  0.0  3.57230E-06  293.0  end
gd-155    18  0.0  1.11792E-09  293.0  end
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u-234     18  0.0  6.28093E-06  293.0  end
u-235     18  0.0  5.45227E-04  293.0  end
u-236     18  0.0  7.07423E-05  293.0  end
u-238     18  0.0  2.17696E-02  293.0  end
np-237    18  0.0  3.67141E-06  293.0  end
pu-238    18  0.0  5.13379E-07  293.0  end
pu-239    18  0.0  1.09458E-04  293.0  end
pu-240    18  0.0  2.13488E-05  293.0  end
pu-241    18  0.0  1.13060E-05  293.0  end
pu-242    18  0.0  1.39242E-06  293.0  end
am-241    18  0.0  1.73488E-07  293.0  end
am-243    18  0.0  1.08363E-07  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  3.60489E-06  293.0  end
tc-99     19  0.0  9.62205E-06  293.0  end
ru-101    19  0.0  8.62330E-06  293.0  end
rh-103    19  0.0  3.72052E-06  293.0  end
ag-109    19  0.0  2.80964E-07  293.0  end
cs-133    19  0.0  1.00124E-05  293.0  end
nd-143    19  0.0  7.82217E-06  293.0  end
nd-145    19  0.0  6.11608E-06  293.0  end
sm-147    19  0.0  1.66025E-07  293.0  end
sm-149    19  0.0  1.12591E-07  293.0  end
sm-150    19  0.0  1.77893E-06  293.0  end
sm-151    19  0.0  3.39708E-07  293.0  end
sm-152    19  0.0  8.48281E-07  293.0  end
eu-153    19  0.0  4.06906E-07  293.0  end
gd-155    19  0.0  2.38783E-10  293.0  end
u-234     19  0.0  7.18904E-06  293.0  end
u-235     19  0.0  7.63846E-04  293.0  end
u-236     19  0.0  3.50434E-05  293.0  end
u-238     19  0.0  2.18987E-02  293.0  end
np-237    19  0.0  1.12639E-06  293.0  end
pu-238    19  0.0  6.67749E-08  293.0  end
pu-239    19  0.0  7.78525E-05  293.0  end
pu-240    19  0.0  6.56349E-06  293.0  end
pu-241    19  0.0  2.16806E-06  293.0  end
pu-242    19  0.0  8.57529E-08  293.0  end
am-241    19  0.0  1.30160E-08  293.0  end
am-243    19  0.0  2.92719E-09  293.0  end
o         19  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id01045.mip_b30

```
u-234     18  0.0  5.09418E-06  293.0  end
u-235     18  0.0  3.42706E-04  293.0  end
u-236     18  0.0  1.02218E-04  293.0  end
u-238     18  0.0  2.15582E-02  293.0  end
np-237    18  0.0  8.51755E-06  293.0  end
pu-238    18  0.0  2.22102E-06  293.0  end
pu-239    18  0.0  1.31508E-04  293.0  end
pu-240    18  0.0  4.05066E-05  293.0  end
pu-241    18  0.0  2.53462E-05  293.0  end
pu-242    18  0.0  6.51847E-06  293.0  end
am-241    18  0.0  6.23437E-07  293.0  end
am-243    18  0.0  9.43518E-07  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  1.07992E-05  293.0  end
tc-99     19  0.0  1.76762E-05  293.0  end
ru-101    19  0.0  1.60668E-05  293.0  end
rh-103    19  0.0  8.25125E-06  293.0  end
ag-109    19  0.0  7.75062E-07  293.0  end
cs-133    19  0.0  1.84718E-05  293.0  end
nd-143    19  0.0  1.46035E-05  293.0  end
nd-145    19  0.0  1.09672E-05  293.0  end
sm-147    19  0.0  5.27112E-07  293.0  end
sm-149    19  0.0  1.31370E-07  293.0  end
sm-150    19  0.0  3.63945E-06  293.0  end
sm-151    19  0.0  4.57408E-07  293.0  end
sm-152    19  0.0  1.69108E-06  293.0  end
eu-153    19  0.0  1.00906E-06  293.0  end
gd-155    19  0.0  4.44172E-10  293.0  end
u-234     19  0.0  6.53976E-06  293.0  end
u-235     19  0.0  6.47341E-04  293.0  end
u-236     19  0.0  5.69246E-05  293.0  end
u-238     19  0.0  2.17965E-02  293.0  end
np-237    19  0.0  2.86069E-06  293.0  end
pu-238    19  0.0  3.20752E-07  293.0  end
pu-239    19  0.0  1.20509E-04  293.0  end
pu-240    19  0.0  1.59776E-05  293.0  end
pu-241    19  0.0  8.15522E-06  293.0  end
pu-242    19  0.0  6.30115E-07  293.0  end
am-241    19  0.0  9.26971E-08  293.0  end
am-243    19  0.0  4.31533E-08  293.0  end
o         19  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id01045_b50.mip

File ed24_f01_id01567_b30.mip

```
lfd.Nr.:   1 aus sha_alf.mod


mo-95      1  0.0  4.67069E-06  293.0  end
tc-99      1  0.0  1.09863E-05  293.0  end
ru-101     1  0.0  9.76043E-06  293.0  end
rh-103     1  0.0  4.33782E-06  293.0  end
ag-109     1  0.0  2.96840E-07  293.0  end
cs-133     1  0.0  1.14667E-05  293.0  end
nd-143     1  0.0  9.00927E-06  293.0  end
nd-145     1  0.0  6.97408E-06  293.0  end
sm-147     1  0.0  2.19762E-07  293.0  end
sm-149     1  0.0  9.14633E-08  293.0  end
sm-150     1  0.0  2.03663E-06  293.0  end
sm-151     1  0.0  3.17012E-07  293.0  end
sm-152     1  0.0  1.00990E-06  293.0  end
eu-153     1  0.0  4.53614E-07  293.0  end
gd-155     1  0.0  2.04788E-10  293.0  end
u-234      1  0.0  7.22023E-06  293.0  end
u-235      1  0.0  7.38873E-04  293.0  end
u-236      1  0.0  3.73654E-05  293.0  end
u-238      1  0.0  2.19107E-02  293.0  end
np-237     1  0.0  1.05409E-06  293.0  end
pu-238     1  0.0  6.33352E-08  293.0  end
pu-239     1  0.0  6.66489E-05  293.0  end
```

File ed24_f01_id01567_b50.mip

```
lfd.Nr.:   2 aus sha_alf.mod


mo-95      1  0.0  1.26482E-05  293.0  end
tc-99      1  0.0  1.95368E-05  293.0  end
ru-101     1  0.0  1.75918E-05  293.0  end
rh-103     1  0.0  9.00247E-06  293.0  end
ag-109     1  0.0  7.84850E-07  293.0  end
cs-133     1  0.0  2.04575E-05  293.0  end
nd-143     1  0.0  1.60256E-05  293.0  end
nd-145     1  0.0  1.21365E-05  293.0  end
sm-147     1  0.0  6.53922E-07  293.0  end
sm-149     1  0.0  1.00426E-07  293.0  end
sm-150     1  0.0  3.97195E-06  293.0  end
sm-151     1  0.0  3.89219E-07  293.0  end
sm-152     1  0.0  1.93048E-06  293.0  end
eu-153     1  0.0  1.07424E-06  293.0  end
gd-155     1  0.0  3.43221E-10  293.0  end
u-234      1  0.0  6.62234E-06  293.0  end
u-235      1  0.0  6.11882E-04  293.0  end
u-236      1  0.0  5.95161E-05  293.0  end
u-238      1  0.0  2.18235E-02  293.0  end
np-237     1  0.0  2.56224E-06  293.0  end
pu-238     1  0.0  2.82537E-07  293.0  end
pu-239     1  0.0  9.73220E-05  293.0  end
```

```
pu-240     1  0.0  6.76284E-06  293.0  end
pu-241     1  0.0  2.13231E-06  293.0  end
pu-242     1  0.0  1.00259E-07  293.0  end
am-241     1  0.0  1.44253E-08  293.0  end
am-243     1  0.0  3.04791E-09  293.0  end
o          1  0.0  4.58960E-02  293.0  end
mo-95      2  0.0  2.12313E-05  293.0  end
tc-99      2  0.0  2.79087E-05  293.0  end
ru-101     2  0.0  2.55954E-05  293.0  end
rh-103     2  0.0  1.36186E-05  293.0  end
ag-109     2  0.0  1.43798E-06  293.0  end
cs-133     2  0.0  2.91472E-05  293.0  end
nd-143     2  0.0  2.22842E-05  293.0  end
nd-145     2  0.0  1.70912E-05  293.0  end
sm-147     2  0.0  1.21594E-06  293.0  end
sm-149     2  0.0  1.04634E-07  293.0  end
sm-150     2  0.0  6.07782E-06  293.0  end
sm-151     2  0.0  4.44308E-07  293.0  end
sm-152     2  0.0  2.80210E-06  293.0  end
eu-153     2  0.0  1.89643E-06  293.0  end
gd-155     2  0.0  5.57124E-10  293.0  end
u-234      2  0.0  6.03439E-06  293.0  end
u-235      2  0.0  4.99519E-04  293.0  end
u-236      2  0.0  7.82335E-05  293.0  end
u-238      2  0.0  2.17298E-02  293.0  end
np-237     2  0.0  4.56568E-06  293.0  end
pu-238     2  0.0  7.41492E-07  293.0  end
pu-239     2  0.0  1.16328E-04  293.0  end
pu-240     2  0.0  2.54122E-05  293.0  end
pu-241     2  0.0  1.42574E-05  293.0  end
pu-242     2  0.0  2.09726E-06  293.0  end
am-241     2  0.0  2.49228E-07  293.0  end
am-243     2  0.0  1.91755E-07  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  2.90427E-05  293.0  end
tc-99      3  0.0  3.54266E-05  293.0  end
ru-101     3  0.0  3.30957E-05  293.0  end
rh-103     3  0.0  1.76880E-05  293.0  end
ag-109     3  0.0  2.15539E-06  293.0  end
cs-133     3  0.0  3.68325E-05  293.0  end
nd-143     3  0.0  2.73465E-05  293.0  end
nd-145     3  0.0  2.14648E-05  293.0  end
sm-147     3  0.0  1.78074E-06  293.0  end
sm-149     3  0.0  1.05311E-07  293.0  end
sm-150     3  0.0  8.11454E-06  293.0  end
sm-151     3  0.0  4.89233E-07  293.0  end
sm-152     3  0.0  3.55372E-06  293.0  end
eu-153     3  0.0  2.79184E-06  293.0  end
gd-155     3  0.0  8.37506E-10  293.0  end
u-234      3  0.0  5.50475E-06  293.0  end
u-235      3  0.0  4.07826E-04  293.0  end
u-236      3  0.0  9.26287E-05  293.0  end
u-238      3  0.0  2.16368E-02  293.0  end
np-237     3  0.0  6.71084E-06  293.0  end
pu-238     3  0.0  1.44346E-06  293.0  end
pu-239     3  0.0  1.26732E-04  293.0  end
pu-240     3  0.0  3.40627E-05  293.0  end
pu-241     3  0.0  2.06501E-05  293.0  end
pu-242     3  0.0  4.23479E-06  293.0  end
am-241     3  0.0  4.48617E-07  293.0  end
am-243     3  0.0  5.14189E-07  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  3.66247E-05  293.0  end
tc-99      4  0.0  4.27056E-05  293.0  end
ru-101     4  0.0  4.06791E-05  293.0  end
rh-103     4  0.0  2.14951E-05  293.0  end
ag-109     4  0.0  2.95753E-06  293.0  end
cs-133     4  0.0  4.41455E-05  293.0  end
nd-143     4  0.0  3.16872E-05  293.0  end
nd-145     4  0.0  2.56340E-05  293.0  end
sm-147     4  0.0  2.34093E-06  293.0  end
sm-149     4  0.0  1.03755E-07  293.0  end
sm-150     4  0.0  1.01928E-05  293.0  end
sm-151     4  0.0  5.29238E-07  293.0  end
sm-152     4  0.0  4.25742E-06  293.0  end
eu-153     4  0.0  3.78002E-06  293.0  end
gd-155     4  0.0  1.19767E-09  293.0  end
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pu-240     1  0.0  1.57889E-05  293.0  end
pu-241     1  0.0  7.44622E-06  293.0  end
pu-242     1  0.0  6.91114E-07  293.0  end
am-241     1  0.0  9.13615E-08  293.0  end
am-243     1  0.0  4.11972E-08  293.0  end
o          1  0.0  4.58960E-02  293.0  end
mo-95      2  0.0  3.98296E-05  293.0  end
tc-99      2  0.0  4.57776E-05  293.0  end
ru-101     2  0.0  4.39881E-05  293.0  end
rh-103     2  0.0  2.30492E-05  293.0  end
ag-109     2  0.0  3.32577E-06  293.0  end
cs-133     2  0.0  4.71892E-05  293.0  end
nd-143     2  0.0  3.33345E-05  293.0  end
nd-145     2  0.0  2.73747E-05  293.0  end
sm-147     2  0.0  2.57287E-06  293.0  end
sm-149     2  0.0  1.02568E-07  293.0  end
sm-150     2  0.0  1.10964E-05  293.0  end
sm-151     2  0.0  5.45081E-07  293.0  end
sm-152     2  0.0  4.54846E-06  293.0  end
eu-153     2  0.0  4.22833E-06  293.0  end
gd-155     2  0.0  1.37673E-09  293.0  end
u-234      2  0.0  4.77306E-06  293.0  end
u-235      2  0.0  2.95379E-04  293.0  end
u-236      2  0.0  1.08742E-04  293.0  end
u-238      2  0.0  2.14917E-02  293.0  end
np-237     2  0.0  9.99246E-06  293.0  end
pu-238     2  0.0  2.99116E-06  293.0  end
pu-239     2  0.0  1.33676E-04  293.0  end
pu-240     2  0.0  4.52922E-05  293.0  end
pu-241     2  0.0  2.87132E-05  293.0  end
pu-242     2  0.0  8.70806E-06  293.0  end
am-241     2  0.0  7.61991E-07  293.0  end
am-243     2  0.0  1.41614E-06  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  5.06994E-05  293.0  end
tc-99      3  0.0  5.61459E-05  293.0  end
ru-101     3  0.0  5.57179E-05  293.0  end
rh-103     3  0.0  2.79821E-05  293.0  end
ag-109     3  0.0  4.69054E-06  293.0  end
cs-133     3  0.0  5.72281E-05  293.0  end
nd-143     3  0.0  3.79639E-05  293.0  end
nd-145     3  0.0  3.31608E-05  293.0  end
sm-147     3  0.0  3.29644E-06  293.0  end
sm-149     3  0.0  9.68565E-08  293.0  end
sm-150     3  0.0  1.42273E-05  293.0  end
sm-151     3  0.0  5.94146E-07  293.0  end
sm-152     3  0.0  5.50897E-06  293.0  end
eu-153     3  0.0  5.85408E-06  293.0  end
gd-155     3  0.0  2.10197E-09  293.0  end
u-234      3  0.0  4.03888E-06  293.0  end
u-235      3  0.0  1.99381E-04  293.0  end
u-236      3  0.0  1.20224E-04  293.0  end
u-238      3  0.0  2.13218E-02  293.0  end
np-237     3  0.0  1.34780E-05  293.0  end
pu-238     3  0.0  5.34761E-06  293.0  end
pu-239     3  0.0  1.34721E-04  293.0  end
pu-240     3  0.0  5.50798E-05  293.0  end
pu-241     3  0.0  3.50511E-05  293.0  end
pu-242     3  0.0  1.51762E-05  293.0  end
am-241     3  0.0  1.04439E-06  293.0  end
am-243     3  0.0  2.99423E-06  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  5.96712E-05  293.0  end
tc-99      4  0.0  6.46007E-05  293.0  end
ru-101     4  0.0  6.60785E-05  293.0  end
rh-103     4  0.0  3.15433E-05  293.0  end
ag-109     4  0.0  5.93158E-06  293.0  end
cs-133     4  0.0  6.50896E-05  293.0  end
nd-143     4  0.0  4.05165E-05  293.0  end
nd-145     4  0.0  3.77725E-05  293.0  end
sm-147     4  0.0  3.77541E-06  293.0  end
sm-149     4  0.0  9.15997E-08  293.0  end
sm-150     4  0.0  1.68313E-05  293.0  end
sm-151     4  0.0  6.31352E-07  293.0  end
sm-152     4  0.0  6.26848E-06  293.0  end
eu-153     4  0.0  7.27784E-06  293.0  end
gd-155     4  0.0  2.85189E-09  293.0  end
```

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u-234     4  0.0  4.99050E-06  293.0  end       u-234     4  0.0  3.44279E-06  293.0  end
u-235     4  0.0  3.27069E-04  293.0  end       u-235     4  0.0  1.34474E-04  293.0  end
u-236     4  0.0  1.04426E-04  293.0  end       u-236     4  0.0  1.25700E-04  293.0  end
u-238     4  0.0  2.15373E-02  293.0  end       u-238     4  0.0  2.11573E-02  293.0  end
np-237    4  0.0  8.98879E-06  293.0  end       np-237    4  0.0  1.62253E-05  293.0  end
pu-238    4  0.0  2.45348E-06  293.0  end       pu-238    4  0.0  7.90604E-06  293.0  end
pu-239    4  0.0  1.32347E-04  293.0  end       pu-239    4  0.0  1.32944E-04  293.0  end
pu-240    4  0.0  4.20805E-05  293.0  end       pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end       pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end       pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end       am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end       am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end       o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end       mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end       tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end       ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end       rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end       ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end       cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end       nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end       nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end       sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end       sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end       sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end       sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end       sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end       eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end       gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end       u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end       u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end       u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end       u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end       np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end       pu-238    5  0.0  8.76042E-06  293.0  end
pu-239    5  0.0  1.33299E-04  293.0  end       pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end       pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end       pu-241    5  0.0  3.94419E-05  293.0  end
pu-242    5  0.0  8.19047E-06  293.0  end       pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end       am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end       am-243    5  0.0  5.58383E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end       o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  3.99245E-05  293.0  end       mo-95     6  0.0  6.36571E-05  293.0  end
tc-99     6  0.0  4.58684E-05  293.0  end       tc-99     6  0.0  6.83111E-05  293.0  end
ru-101    6  0.0  4.40871E-05  293.0  end       ru-101    6  0.0  7.09080E-05  293.0  end
rh-103    6  0.0  2.30946E-05  293.0  end       rh-103    6  0.0  3.29433E-05  293.0  end
ag-109    6  0.0  3.33693E-06  293.0  end       ag-109    6  0.0  6.50953E-06  293.0  end
cs-133    6  0.0  4.72788E-05  293.0  end       cs-133    6  0.0  6.84264E-05  293.0  end
nd-143    6  0.0  3.33814E-05  293.0  end       nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end       nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end       sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end       sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end       sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end       sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end       sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end       eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end       gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end       u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end       u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end       u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end       u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end       np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end       pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end       pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end       pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end       pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end       pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end       am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end       am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end       o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end       mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end       tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end       ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end       rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end       ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end       cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end       nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end       nd-145    7  0.0  4.00320E-05  293.0  end
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sm-147     7  0.0  2.60653E-06  293.0  end
sm-149     7  0.0  1.02369E-07  293.0  end
sm-150     7  0.0  1.12305E-05  293.0  end
sm-151     7  0.0  5.47362E-07  293.0  end
sm-152     7  0.0  4.59108E-06  293.0  end
eu-153     7  0.0  4.29579E-06  293.0  end
gd-155     7  0.0  1.40447E-09  293.0  end
u-234      7  0.0  4.74102E-06  293.0  end
u-235      7  0.0  2.90831E-04  293.0  end
u-236      7  0.0  1.09344E-04  293.0  end
u-238      7  0.0  2.14850E-02  293.0  end
np-237     7  0.0  1.01420E-05  293.0  end
pu-238     7  0.0  3.07627E-06  293.0  end
pu-239     7  0.0  1.33828E-04  293.0  end
pu-240     7  0.0  4.57545E-05  293.0  end
pu-241     7  0.0  2.90311E-05  293.0  end
pu-242     7  0.0  8.94661E-06  293.0  end
am-241     7  0.0  7.75585E-07  293.0  end
am-243     7  0.0  1.47055E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.95792E-05  293.0  end
tc-99      8  0.0  4.55378E-05  293.0  end
ru-101     8  0.0  4.37271E-05  293.0  end
rh-103     8  0.0  2.29293E-05  293.0  end
ag-109     8  0.0  3.29641E-06  293.0  end
cs-133     8  0.0  4.69526E-05  293.0  end
nd-143     8  0.0  3.32102E-05  293.0  end
nd-145     8  0.0  2.72393E-05  293.0  end
sm-147     8  0.0  2.55497E-06  293.0  end
sm-149     8  0.0  1.02671E-07  293.0  end
sm-150     8  0.0  1.10254E-05  293.0  end
sm-151     8  0.0  5.43866E-07  293.0  end
sm-152     8  0.0  4.52584E-06  293.0  end
eu-153     8  0.0  4.19271E-06  293.0  end
gd-155     8  0.0  1.36216E-09  293.0  end
u-234      8  0.0  4.79005E-06  293.0  end
u-235      8  0.0  2.97803E-04  293.0  end
u-236      8  0.0  1.08419E-04  293.0  end
u-238      8  0.0  2.14952E-02  293.0  end
np-237     8  0.0  9.91337E-06  293.0  end
pu-238     8  0.0  2.94667E-06  293.0  end
pu-239     8  0.0  1.33592E-04  293.0  end
pu-240     8  0.0  4.50459E-05  293.0  end
pu-241     8  0.0  2.85432E-05  293.0  end
pu-242     8  0.0  8.58315E-06  293.0  end
am-241     8  0.0  7.54760E-07  293.0  end
am-243     8  0.0  1.38782E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  3.85161E-05  293.0  end
tc-99      9  0.0  4.45193E-05  293.0  end
ru-101     9  0.0  4.26241E-05  293.0  end
rh-103     9  0.0  2.24167E-05  293.0  end
ag-109     9  0.0  3.17286E-06  293.0  end
cs-133     9  0.0  4.59459E-05  293.0  end
nd-143     9  0.0  3.26739E-05  293.0  end
nd-145     9  0.0  2.66628E-05  293.0  end
sm-147     9  0.0  2.47847E-06  293.0  end
sm-149     9  0.0  1.03087E-07  293.0  end
sm-150     9  0.0  1.07246E-05  293.0  end
sm-151     9  0.0  5.38669E-07  293.0  end
sm-152     9  0.0  4.42961E-06  293.0  end
eu-153     9  0.0  4.04254E-06  293.0  end
gd-155     9  0.0  1.30144E-09  293.0  end
u-234      9  0.0  4.86219E-06  293.0  end
u-235      9  0.0  3.08189E-04  293.0  end
u-236      9  0.0  1.07020E-04  293.0  end
u-238      9  0.0  2.15106E-02  293.0  end
np-237     9  0.0  9.57877E-06  293.0  end
pu-238     9  0.0  2.76242E-06  293.0  end
pu-239     9  0.0  1.33196E-04  293.0  end
pu-240     9  0.0  4.39911E-05  293.0  end
pu-241     9  0.0  2.78109E-05  293.0  end
pu-242     9  0.0  8.06416E-06  293.0  end
am-241     9  0.0  7.23880E-07  293.0  end
am-243     9  0.0  1.27181E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  3.77225E-05  293.0  end
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sm-147     7  0.0  3.96292E-06  293.0  end
sm-149     7  0.0  8.86158E-08  293.0  end
sm-150     7  0.0  1.81246E-05  293.0  end
sm-151     7  0.0  6.48610E-07  293.0  end
sm-152     7  0.0  6.64004E-06  293.0  end
eu-153     7  0.0  8.00504E-06  293.0  end
gd-155     7  0.0  3.27190E-09  293.0  end
u-234      7  0.0  3.14936E-06  293.0  end
u-235      7  0.0  1.07033E-04  293.0  end
u-236      7  0.0  1.27003E-04  293.0  end
u-238      7  0.0  2.10638E-02  293.0  end
np-237     7  0.0  1.75686E-05  293.0  end
pu-238     7  0.0  9.36658E-06  293.0  end
pu-239     7  0.0  1.31543E-04  293.0  end
pu-240     7  0.0  6.41029E-05  293.0  end
pu-241     7  0.0  3.98988E-05  293.0  end
pu-242     7  0.0  2.59358E-05  293.0  end
am-241     7  0.0  1.24514E-06  293.0  end
am-243     7  0.0  6.08700E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.35416E-05  293.0  end
tc-99      8  0.0  6.82041E-05  293.0  end
ru-101     8  0.0  7.07660E-05  293.0  end
rh-103     8  0.0  3.29044E-05  293.0  end
ag-109     8  0.0  6.49260E-06  293.0  end
cs-133     8  0.0  6.83313E-05  293.0  end
nd-143     8  0.0  4.12258E-05  293.0  end
nd-145     8  0.0  3.97090E-05  293.0  end
sm-147     8  0.0  3.93831E-06  293.0  end
sm-149     8  0.0  8.90389E-08  293.0  end
sm-150     8  0.0  1.79393E-05  293.0  end
sm-151     8  0.0  6.46165E-07  293.0  end
sm-152     8  0.0  6.58693E-06  293.0  end
eu-153     8  0.0  7.90004E-06  293.0  end
gd-155     8  0.0  3.20910E-09  293.0  end
u-234      8  0.0  3.19131E-06  293.0  end
u-235      8  0.0  1.10770E-04  293.0  end
u-236      8  0.0  1.26880E-04  293.0  end
u-238      8  0.0  2.10779E-02  293.0  end
np-237     8  0.0  1.73813E-05  293.0  end
pu-238     8  0.0  9.14952E-06  293.0  end
pu-239     8  0.0  1.31758E-04  293.0  end
pu-240     8  0.0  6.37523E-05  293.0  end
pu-241     8  0.0  3.97436E-05  293.0  end
pu-242     8  0.0  2.53525E-05  293.0  end
am-241     8  0.0  1.24005E-06  293.0  end
am-243     8  0.0  5.90529E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  6.25017E-05  293.0  end
tc-99      9  0.0  6.72392E-05  293.0  end
ru-101     9  0.0  6.94929E-05  293.0  end
rh-103     9  0.0  3.25501E-05  293.0  end
ag-109     9  0.0  6.34060E-06  293.0  end
cs-133     9  0.0  6.74704E-05  293.0  end
nd-143     9  0.0  4.10587E-05  293.0  end
nd-145     9  0.0  3.91922E-05  293.0  end
sm-147     9  0.0  3.89739E-06  293.0  end
sm-149     9  0.0  8.97077E-08  293.0  end
sm-150     9  0.0  1.76431E-05  293.0  end
sm-151     9  0.0  6.42227E-07  293.0  end
sm-152     9  0.0  6.50205E-06  293.0  end
eu-153     9  0.0  7.73280E-06  293.0  end
gd-155     9  0.0  3.11030E-09  293.0  end
u-234      9  0.0  3.25841E-06  293.0  end
u-235      9  0.0  1.16875E-04  293.0  end
u-236      9  0.0  1.26635E-04  293.0  end
u-238      9  0.0  2.10999E-02  293.0  end
np-237     9  0.0  1.70808E-05  293.0  end
pu-238     9  0.0  8.80797E-06  293.0  end
pu-239     9  0.0  1.32088E-04  293.0  end
pu-240     9  0.0  6.31770E-05  293.0  end
pu-241     9  0.0  3.94804E-05  293.0  end
pu-242     9  0.0  2.44361E-05  293.0  end
am-241     9  0.0  1.23098E-06  293.0  end
am-243     9  0.0  5.62282E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  6.17218E-05  293.0  end
```

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tc-99    10  0.0  4.37585E-05  293.0  end
ru-101   10  0.0  4.18054E-05  293.0  end
rh-103   10  0.0  2.20313E-05  293.0  end
ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
u-235    11  0.0  3.22255E-04  293.0  end
u-236    11  0.0  1.05095E-04  293.0  end
u-238    11  0.0  2.15307E-02  293.0  end
np-237   11  0.0  9.13701E-06  293.0  end
pu-238   11  0.0  2.52920E-06  293.0  end
pu-239   11  0.0  1.32580E-04  293.0  end
pu-240   11  0.0  4.25667E-05  293.0  end
pu-241   11  0.0  2.68115E-05  293.0  end
pu-242   11  0.0  7.40231E-06  293.0  end
am-241   11  0.0  6.82477E-07  293.0  end
am-243   11  0.0  1.12799E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  3.63734E-05  293.0  end
tc-99    12  0.0  4.24647E-05  293.0  end
ru-101   12  0.0  4.04227E-05  293.0  end
rh-103   12  0.0  2.13720E-05  293.0  end
ag-109   12  0.0  2.92939E-06  293.0  end
cs-133   12  0.0  4.39058E-05  293.0  end
nd-143   12  0.0  3.15532E-05  293.0  end
nd-145   12  0.0  2.54971E-05  293.0  end
sm-147   12  0.0  2.32256E-06  293.0  end
sm-149   12  0.0  1.03836E-07  293.0  end
sm-150   12  0.0  1.01227E-05  293.0  end
sm-151   12  0.0  5.27971E-07  293.0  end
sm-152   12  0.0  4.23447E-06  293.0  end
eu-153   12  0.0  3.74564E-06  293.0  end
gd-155   12  0.0  1.18433E-09  293.0  end
u-234    12  0.0  5.00751E-06  293.0  end
u-235    12  0.0  3.29615E-04  293.0  end
u-236    12  0.0  1.04069E-04  293.0  end
u-238    12  0.0  2.15407E-02  293.0  end
np-237   12  0.0  8.91104E-06  293.0  end
pu-238   12  0.0  2.41426E-06  293.0  end
pu-239   12  0.0  1.32218E-04  293.0  end
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tc-99    10  0.0  6.65140E-05  293.0  end
ru-101   10  0.0  6.85447E-05  293.0  end
rh-103   10  0.0  3.22787E-05  293.0  end
ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
u-235    11  0.0  1.24735E-04  293.0  end
u-236    11  0.0  1.26254E-04  293.0  end
u-238    11  0.0  2.11266E-02  293.0  end
np-237   11  0.0  1.66955E-05  293.0  end
pu-238   11  0.0  8.39082E-06  293.0  end
pu-239   11  0.0  1.32485E-04  293.0  end
pu-240   11  0.0  6.24273E-05  293.0  end
pu-241   11  0.0  3.91285E-05  293.0  end
pu-242   11  0.0  2.33174E-05  293.0  end
am-241   11  0.0  1.21804E-06  293.0  end
am-243   11  0.0  5.28382E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  6.05774E-05  293.0  end
tc-99    12  0.0  6.54472E-05  293.0  end
ru-101   12  0.0  6.71636E-05  293.0  end
rh-103   12  0.0  3.18720E-05  293.0  end
ag-109   12  0.0  6.06172E-06  293.0  end
cs-133   12  0.0  6.58576E-05  293.0  end
nd-143   12  0.0  4.07041E-05  293.0  end
nd-145   12  0.0  3.82289E-05  293.0  end
sm-147   12  0.0  3.81610E-06  293.0  end
sm-149   12  0.0  9.10122E-08  293.0  end
sm-150   12  0.0  1.70919E-05  293.0  end
sm-151   12  0.0  6.34925E-07  293.0  end
sm-152   12  0.0  6.34352E-06  293.0  end
eu-153   12  0.0  7.42345E-06  293.0  end
gd-155   12  0.0  2.93373E-09  293.0  end
u-234    12  0.0  3.38349E-06  293.0  end
u-235    12  0.0  1.28685E-04  293.0  end
u-236    12  0.0  1.26040E-04  293.0  end
u-238    12  0.0  2.11393E-02  293.0  end
np-237   12  0.0  1.65004E-05  293.0  end
pu-238   12  0.0  8.19019E-06  293.0  end
pu-239   12  0.0  1.32679E-04  293.0  end
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pu-240    12   0.0   4.18236E-05   293.0   end
pu-241    12   0.0   2.62856E-05   293.0   end
pu-242    12   0.0   7.07391E-06   293.0   end
am-241    12   0.0   6.61056E-07   293.0   end
am-243    12   0.0   1.05840E-06   293.0   end
o         12   0.0   4.58960E-02   293.0   end
mo-95     13   0.0   3.56166E-05   293.0   end
tc-99     13   0.0   4.17389E-05   293.0   end
ru-101    13   0.0   3.96526E-05   293.0   end
rh-103    13   0.0   2.09998E-05   293.0   end
ag-109    13   0.0   2.84526E-06   293.0   end
cs-133    13   0.0   4.31827E-05   293.0   end
nd-143    13   0.0   3.11452E-05   293.0   end
nd-145    13   0.0   2.50844E-05   293.0   end
sm-147    13   0.0   2.26709E-06   293.0   end
sm-149    13   0.0   1.04070E-07   293.0   end
sm-150    13   0.0   9.91201E-06   293.0   end
sm-151    13   0.0   5.24130E-07   293.0   end
sm-152    13   0.0   4.16521E-06   293.0   end
eu-153    13   0.0   3.64271E-06   293.0   end
gd-155    13   0.0   1.14474E-09   293.0   end
u-234     13   0.0   5.05879E-06   293.0   end
u-235     13   0.0   3.37337E-04   293.0   end
u-236     13   0.0   1.02977E-04   293.0   end
u-238     13   0.0   2.15511E-02   293.0   end
np-237    13   0.0   8.67768E-06   293.0   end
pu-238    13   0.0   2.29860E-06   293.0   end
pu-239    13   0.0   1.31808E-04   293.0   end
pu-240    13   0.0   4.10458E-05   293.0   end
pu-241    13   0.0   2.57321E-05   293.0   end
pu-242    13   0.0   6.74198E-06   293.0   end
am-241    13   0.0   6.38790E-07   293.0   end
am-243    13   0.0   9.89299E-07   293.0   end
o         13   0.0   4.58960E-02   293.0   end
mo-95     14   0.0   3.44576E-05   293.0   end
tc-99     14   0.0   4.06272E-05   293.0   end
ru-101    14   0.0   3.84781E-05   293.0   end
rh-103    14   0.0   2.04246E-05   293.0   end
ag-109    14   0.0   2.71820E-06   293.0   end
cs-133    14   0.0   4.20714E-05   293.0   end
nd-143    14   0.0   3.05087E-05   293.0   end
nd-145    14   0.0   2.44504E-05   293.0   end
sm-147    14   0.0   2.18173E-06   293.0   end
sm-149    14   0.0   1.04399E-07   293.0   end
sm-150    14   0.0   9.59030E-06   293.0   end
sm-151    14   0.0   5.18167E-07   293.0   end
sm-152    14   0.0   4.05863E-06   293.0   end
eu-153    14   0.0   3.48682E-06   293.0   end
gd-155    14   0.0   1.08567E-09   293.0   end
u-234     14   0.0   5.13750E-06   293.0   end
u-235     14   0.0   3.49325E-04   293.0   end
u-236     14   0.0   1.01275E-04   293.0   end
u-238     14   0.0   2.15669E-02   293.0   end
np-237    14   0.0   8.32254E-06   293.0   end
pu-238    14   0.0   2.12847E-06   293.0   end
pu-239    14   0.0   1.31120E-04   293.0   end
pu-240    14   0.0   3.98435E-05   293.0   end
pu-241    14   0.0   2.48695E-05   293.0   end
pu-242    14   0.0   6.25093E-06   293.0   end
am-241    14   0.0   6.04673E-07   293.0   end
am-243    14   0.0   8.89528E-07   293.0   end
o         14   0.0   4.58960E-02   293.0   end
mo-95     15   0.0   3.26208E-05   293.0   end
tc-99     15   0.0   3.88633E-05   293.0   end
ru-101    15   0.0   3.66334E-05   293.0   end
rh-103    15   0.0   1.95056E-05   293.0   end
ag-109    15   0.0   2.52149E-06   293.0   end
cs-133    15   0.0   4.03024E-05   293.0   end
nd-143    15   0.0   2.94693E-05   293.0   end
nd-145    15   0.0   2.34409E-05   293.0   end
sm-147    15   0.0   2.04581E-06   293.0   end
sm-149    15   0.0   1.04818E-07   293.0   end
sm-150    15   0.0   9.08430E-06   293.0   end
sm-151    15   0.0   5.08550E-07   293.0   end
sm-152    15   0.0   3.88868E-06   293.0   end
eu-153    15   0.0   3.24470E-06   293.0   end
gd-155    15   0.0   9.96413E-10   293.0   end
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pu-240    12   0.0   6.20454E-05   293.0   end
pu-241    12   0.0   3.89470E-05   293.0   end
pu-242    12   0.0   2.27791E-05   293.0   end
am-241    12   0.0   1.21104E-06   293.0   end
am-243    12   0.0   5.12320E-06   293.0   end
o         12   0.0   4.58960E-02   293.0   end
mo-95     13   0.0   5.97211E-05   293.0   end
tc-99     13   0.0   6.46473E-05   293.0   end
ru-101    13   0.0   6.61380E-05   293.0   end
rh-103    13   0.0   3.15615E-05   293.0   end
ag-109    13   0.0   5.93872E-06   293.0   end
cs-133    13   0.0   6.51320E-05   293.0   end
nd-143    13   0.0   4.05272E-05   293.0   end
nd-145    13   0.0   3.77977E-05   293.0   end
sm-147    13   0.0   3.77769E-06   293.0   end
sm-149    13   0.0   9.15705E-08   293.0   end
sm-150    13   0.0   1.68457E-05   293.0   end
sm-151    13   0.0   6.31557E-07   293.0   end
sm-152    13   0.0   6.27260E-06   293.0   end
eu-153    13   0.0   7.28585E-06   293.0   end
gd-155    13   0.0   2.85644E-09   293.0   end
u-234     13   0.0   3.43952E-06   293.0   end
u-235     13   0.0   1.34152E-04   293.0   end
u-236     13   0.0   1.25719E-04   293.0   end
u-238     13   0.0   2.11563E-02   293.0   end
np-237    13   0.0   1.62400E-05   293.0   end
pu-238    13   0.0   7.92157E-06   293.0   end
pu-239    13   0.0   1.32930E-04   293.0   end
pu-240    13   0.0   6.15186E-05   293.0   end
pu-241    13   0.0   3.86844E-05   293.0   end
pu-242    13   0.0   2.20594E-05   293.0   end
am-241    13   0.0   1.20082E-06   293.0   end
am-243    13   0.0   4.90995E-06   293.0   end
o         13   0.0   4.58960E-02   293.0   end
mo-95     14   0.0   5.83173E-05   293.0   end
tc-99     14   0.0   6.33341E-05   293.0   end
ru-101    14   0.0   6.44712E-05   293.0   end
rh-103    14   0.0   3.10423E-05   293.0   end
ag-109    14   0.0   5.73898E-06   293.0   end
cs-133    14   0.0   6.39341E-05   293.0   end
nd-143    14   0.0   4.02110E-05   293.0   end
nd-145    14   0.0   3.70878E-05   293.0   end
sm-147    14   0.0   3.71195E-06   293.0   end
sm-149    14   0.0   9.22134E-08   293.0   end
sm-150    14   0.0   1.64405E-05   293.0   end
sm-151    14   0.0   6.25396E-07   293.0   end
sm-152    14   0.0   6.15690E-06   293.0   end
eu-153    14   0.0   7.06000E-06   293.0   end
gd-155    14   0.0   2.72474E-09   293.0   end
u-234     14   0.0   3.53182E-06   293.0   end
u-235     14   0.0   1.43388E-04   293.0   end
u-236     14   0.0   1.25122E-04   293.0   end
u-238     14   0.0   2.11834E-02   293.0   end
np-237    14   0.0   1.58527E-05   293.0   end
pu-238    14   0.0   7.48969E-06   293.0   end
pu-239    14   0.0   1.33284E-04   293.0   end
pu-240    14   0.0   6.06508E-05   293.0   end
pu-241    14   0.0   3.81956E-05   293.0   end
pu-242    14   0.0   2.09077E-05   293.0   end
am-241    14   0.0   1.18227E-06   293.0   end
am-243    14   0.0   4.56963E-06   293.0   end
o         14   0.0   4.58960E-02   293.0   end
mo-95     15   0.0   5.59766E-05   293.0   end
tc-99     15   0.0   6.11354E-05   293.0   end
ru-101    15   0.0   6.17305E-05   293.0   end
rh-103    15   0.0   3.01438E-05   293.0   end
ag-109    15   0.0   5.41006E-06   293.0   end
cs-133    15   0.0   6.19087E-05   293.0   end
nd-143    15   0.0   3.96147E-05   293.0   end
nd-145    15   0.0   3.58942E-05   293.0   end
sm-147    15   0.0   3.59443E-06   293.0   end
sm-149    15   0.0   9.35183E-08   293.0   end
sm-150    15   0.0   1.57616E-05   293.0   end
sm-151    15   0.0   6.15679E-07   293.0   end
sm-152    15   0.0   5.96088E-06   293.0   end
eu-153    15   0.0   6.68553E-06   293.0   end
gd-155    15   0.0   2.51946E-09   293.0   end
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u-234    15  0.0  5.26210E-06  293.0  end
u-235    15  0.0  3.68717E-04  293.0  end
u-236    15  0.0  9.84635E-05  293.0  end
u-238    15  0.0  2.15906E-02  293.0  end
np-237   15  0.0  7.76651E-06  293.0  end
pu-238   15  0.0  1.87619E-06  293.0  end
pu-239   15  0.0  1.29853E-04  293.0  end
pu-240   15  0.0  3.79097E-05  293.0  end
pu-241   15  0.0  2.34701E-05  293.0  end
pu-242   15  0.0  5.51600E-06  293.0  end
am-241   15  0.0  5.50895E-07  293.0  end
am-243   15  0.0  7.45982E-07  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  2.99195E-05  293.0  end
tc-99    16  0.0  3.62688E-05  293.0  end
ru-101   16  0.0  3.39560E-05  293.0  end
rh-103   16  0.0  1.81361E-05  293.0  end
ag-109   16  0.0  2.24298E-06  293.0  end
cs-133   16  0.0  3.76852E-05  293.0  end
nd-143   16  0.0  2.78782E-05  293.0  end
nd-145   16  0.0  2.19504E-05  293.0  end
sm-147   16  0.0  1.84561E-06  293.0  end
sm-149   16  0.0  1.05235E-07  293.0  end
sm-150   16  0.0  8.35010E-06  293.0  end
sm-151   16  0.0  4.94038E-07  293.0  end
sm-152   16  0.0  3.63625E-06  293.0  end
eu-153   16  0.0  2.90044E-06  293.0  end
gd-155   16  0.0  8.74616E-10  293.0  end
u-234    16  0.0  5.44532E-06  293.0  end
u-235    16  0.0  3.98079E-04  293.0  end
u-236    16  0.0  9.41026E-05  293.0  end
u-238    16  0.0  2.16255E-02  293.0  end
np-237   16  0.0  6.96587E-06  293.0  end
pu-238   16  0.0  1.54255E-06  293.0  end
pu-239   16  0.0  1.27582E-04  293.0  end
pu-240   16  0.0  3.50137E-05  293.0  end
pu-241   16  0.0  2.13511E-05  293.0  end
pu-242   16  0.0  4.53056E-06  293.0  end
am-241   16  0.0  4.73250E-07  293.0  end
am-243   16  0.0  5.65454E-07  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  2.55024E-05  293.0  end
tc-99    17  0.0  3.20226E-05  293.0  end
ru-101   17  0.0  2.96603E-05  293.0  end
rh-103   17  0.0  1.58586E-05  293.0  end
ag-109   17  0.0  1.81599E-06  293.0  end
cs-133   17  0.0  3.33671E-05  293.0  end
nd-143   17  0.0  2.51233E-05  293.0  end
nd-145   17  0.0  1.94933E-05  293.0  end
sm-147   17  0.0  1.52096E-06  293.0  end
sm-149   17  0.0  1.05319E-07  293.0  end
sm-150   17  0.0  7.17686E-06  293.0  end
sm-151   17  0.0  4.69348E-07  293.0  end
sm-152   17  0.0  3.21675E-06  293.0  end
eu-153   17  0.0  2.36941E-06  293.0  end
gd-155   17  0.0  6.99396E-10  293.0  end
u-234    17  0.0  5.74484E-06  293.0  end
u-235    17  0.0  4.48304E-04  293.0  end
u-236    17  0.0  8.63882E-05  293.0  end
u-238    17  0.0  2.16799E-02  293.0  end
np-237   17  0.0  5.70675E-06  293.0  end
pu-238   17  0.0  1.08656E-06  293.0  end
pu-239   17  0.0  1.22672E-04  293.0  end
pu-240   17  0.0  3.01727E-05  293.0  end
pu-241   17  0.0  1.77719E-05  293.0  end
pu-242   17  0.0  3.15687E-06  293.0  end
am-241   17  0.0  3.53101E-07  293.0  end
am-243   17  0.0  3.40169E-07  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  1.76069E-05  293.0  end
tc-99    18  0.0  2.44029E-05  293.0  end
ru-101   18  0.0  2.22017E-05  293.0  end
rh-103   18  0.0  1.16905E-05  293.0  end
ag-109   18  0.0  1.14486E-06  293.0  end
cs-133   18  0.0  2.55237E-05  293.0  end
nd-143   18  0.0  1.97398E-05  293.0  end
nd-145   18  0.0  1.50279E-05  293.0  end
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u-234    15  0.0  3.68665E-06  293.0  end
u-235    15  0.0  1.59551E-04  293.0  end
u-236    15  0.0  1.23904E-04  293.0  end
u-238    15  0.0  2.12279E-02  293.0  end
np-237   15  0.0  1.51594E-05  293.0  end
pu-238   15  0.0  6.79175E-06  293.0  end
pu-239   15  0.0  1.33837E-04  293.0  end
pu-240   15  0.0  5.90808E-05  293.0  end
pu-241   15  0.0  3.73309E-05  293.0  end
pu-242   15  0.0  1.90485E-05  293.0  end
am-241   15  0.0  1.14652E-06  293.0  end
am-243   15  0.0  4.03851E-06  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  5.23242E-05  293.0  end
tc-99    16  0.0  5.76858E-05  293.0  end
ru-101   16  0.0  5.75451E-05  293.0  end
rh-103   16  0.0  2.86662E-05  293.0  end
ag-109   16  0.0  4.90848E-06  293.0  end
cs-133   16  0.0  5.86844E-05  293.0  end
nd-143   16  0.0  3.85167E-05  293.0  end
nd-145   16  0.0  3.40075E-05  293.0  end
sm-147   16  0.0  3.39266E-06  293.0  end
sm-149   16  0.0  9.58510E-08  293.0  end
sm-150   16  0.0  1.46999E-05  293.0  end
sm-151   16  0.0  6.00904E-07  293.0  end
sm-152   16  0.0  5.64916E-06  293.0  end
eu-153   16  0.0  6.10788E-06  293.0  end
gd-155   16  0.0  2.22590E-09  293.0  end
u-234    16  0.0  3.93006E-06  293.0  end
u-235    16  0.0  1.86627E-04  293.0  end
u-236    16  0.0  1.21491E-04  293.0  end
u-238    16  0.0  2.12937E-02  293.0  end
np-237   16  0.0  1.40001E-05  293.0  end
pu-238   16  0.0  5.77184E-06  293.0  end
pu-239   16  0.0  1.34521E-04  293.0  end
pu-240   16  0.0  5.63694E-05  293.0  end
pu-241   16  0.0  3.58101E-05  293.0  end
pu-242   16  0.0  1.63183E-05  293.0  end
am-241   16  0.0  1.07879E-06  293.0  end
am-243   16  0.0  3.29464E-06  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  4.65569E-05  293.0  end
tc-99    17  0.0  5.22062E-05  293.0  end
ru-101   17  0.0  5.11495E-05  293.0  end
rh-103   17  0.0  2.61716E-05  293.0  end
ag-109   17  0.0  4.15057E-06  293.0  end
cs-133   17  0.0  5.34588E-05  293.0  end
nd-143   17  0.0  3.63853E-05  293.0  end
nd-145   17  0.0  3.09781E-05  293.0  end
sm-147   17  0.0  3.03533E-06  293.0  end
sm-149   17  0.0  9.92769E-08  293.0  end
sm-150   17  0.0  1.30259E-05  293.0  end
sm-151   17  0.0  5.76253E-07  293.0  end
sm-152   17  0.0  5.14759E-06  293.0  end
eu-153   17  0.0  5.21793E-06  293.0  end
gd-155   17  0.0  1.80414E-09  293.0  end
u-234    17  0.0  4.31779E-06  293.0  end
u-235    17  0.0  2.33815E-04  293.0  end
u-236    17  0.0  1.16441E-04  293.0  end
u-238    17  0.0  2.13901E-02  293.0  end
np-237   17  0.0  1.21430E-05  293.0  end
pu-238   17  0.0  4.35058E-06  293.0  end
pu-239   17  0.0  1.34861E-04  293.0  end
pu-240   17  0.0  5.15750E-05  293.0  end
pu-241   17  0.0  3.28873E-05  293.0  end
pu-242   17  0.0  1.24681E-05  293.0  end
am-241   17  0.0  9.45989E-07  293.0  end
am-243   17  0.0  2.30830E-06  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  3.50953E-05  293.0  end
tc-99    18  0.0  4.12389E-05  293.0  end
ru-101   18  0.0  3.91233E-05  293.0  end
rh-103   18  0.0  2.07417E-05  293.0  end
ag-109   18  0.0  2.78783E-06  293.0  end
cs-133   18  0.0  4.26833E-05  293.0  end
nd-143   18  0.0  3.08607E-05  293.0  end
nd-145   18  0.0  2.47994E-05  293.0  end
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sm-147   18  0.0  9.68662E-07  293.0  end
sm-149   18  0.0  1.03353E-07  293.0  end
sm-150   18  0.0  5.17314E-06  293.0  end
sm-151   18  0.0  4.22030E-07  293.0  end
sm-152   18  0.0  2.44169E-06  293.0  end
eu-153   18  0.0  1.52808E-06  293.0  end
gd-155   18  0.0  4.55941E-10  293.0  end
u-234    18  0.0  6.28093E-06  293.0  end
u-235    18  0.0  5.45227E-04  293.0  end
u-236    18  0.0  7.07423E-05  293.0  end
u-238    18  0.0  2.17696E-02  293.0  end
np-237   18  0.0  3.67141E-06  293.0  end
pu-238   18  0.0  5.13379E-07  293.0  end
pu-239   18  0.0  1.09458E-04  293.0  end
pu-240   18  0.0  2.13488E-05  293.0  end
pu-241   18  0.0  1.13060E-05  293.0  end
pu-242   18  0.0  1.39242E-06  293.0  end
am-241   18  0.0  1.73488E-07  293.0  end
am-243   18  0.0  1.08363E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  1.73104E-05  293.0  end
tc-99    19  0.0  2.41222E-05  293.0  end
ru-101   19  0.0  2.22734E-05  293.0  end
rh-103   19  0.0  1.19898E-05  293.0  end
ag-109   19  0.0  1.29862E-06  293.0  end
cs-133   19  0.0  2.51558E-05  293.0  end
nd-143   19  0.0  1.97172E-05  293.0  end
nd-145   19  0.0  1.47806E-05  293.0  end
sm-147   19  0.0  9.06763E-07  293.0  end
sm-149   19  0.0  1.42348E-07  293.0  end
sm-150   19  0.0  5.28886E-06  293.0  end
sm-151   19  0.0  5.37314E-07  293.0  end
sm-152   19  0.0  2.34710E-06  293.0  end
eu-153   19  0.0  1.64874E-06  293.0  end
gd-155   19  0.0  7.01769E-10  293.0  end
u-234    19  0.0  6.02958E-06  293.0  end
u-235    19  0.0  5.63255E-04  293.0  end
u-236    19  0.0  7.20874E-05  293.0  end
u-238    19  0.0  2.17085E-02  293.0  end
np-237   19  0.0  4.70199E-06  293.0  end
pu-238   19  0.0  7.31742E-07  293.0  end
pu-239   19  0.0  1.45650E-04  293.0  end
pu-240   19  0.0  2.42397E-05  293.0  end
pu-241   19  0.0  1.46019E-05  293.0  end
pu-242   19  0.0  1.61382E-06  293.0  end
am-241   19  0.0  2.28391E-07  293.0  end
am-243   19  0.0  1.58691E-07  293.0  end
o        19  0.0  4.58960E-02  293.0  end
mo-95    20  0.0  3.60489E-06  293.0  end
tc-99    20  0.0  9.62205E-06  293.0  end
ru-101   20  0.0  8.62330E-06  293.0  end
rh-103   20  0.0  3.72052E-06  293.0  end
ag-109   20  0.0  2.80964E-07  293.0  end
cs-133   20  0.0  1.00124E-05  293.0  end
nd-143   20  0.0  7.82217E-06  293.0  end
nd-145   20  0.0  6.11608E-06  293.0  end
sm-147   20  0.0  1.66025E-07  293.0  end
sm-149   20  0.0  1.12591E-07  293.0  end
sm-150   20  0.0  1.77893E-06  293.0  end
sm-151   20  0.0  3.39708E-07  293.0  end
sm-152   20  0.0  8.48281E-07  293.0  end
eu-153   20  0.0  4.06906E-07  293.0  end
gd-155   20  0.0  2.38783E-10  293.0  end
u-234    20  0.0  7.18904E-06  293.0  end
u-235    20  0.0  7.63846E-04  293.0  end
u-236    20  0.0  3.50434E-05  293.0  end
u-238    20  0.0  2.18987E-02  293.0  end
np-237   20  0.0  1.12639E-06  293.0  end
pu-238   20  0.0  6.67749E-08  293.0  end
pu-239   20  0.0  7.78525E-05  293.0  end
pu-240   20  0.0  6.56349E-06  293.0  end
pu-241   20  0.0  2.16806E-06  293.0  end
pu-242   20  0.0  8.57529E-08  293.0  end
am-241   20  0.0  1.30160E-08  293.0  end
am-243   20  0.0  2.92719E-09  293.0  end
o        20  0.0  4.58960E-02  293.0  end
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sm-147   18  0.0  2.22874E-06  293.0  end
sm-149   18  0.0  1.04223E-07  293.0  end
sm-150   18  0.0  9.76708E-06  293.0  end
sm-151   18  0.0  5.21459E-07  293.0  end
sm-152   18  0.0  4.11733E-06  293.0  end
eu-153   18  0.0  3.57230E-06  293.0  end
gd-155   18  0.0  1.11792E-09  293.0  end
u-234    18  0.0  5.09418E-06  293.0  end
u-235    18  0.0  3.42706E-04  293.0  end
u-236    18  0.0  1.02218E-04  293.0  end
u-238    18  0.0  2.15582E-02  293.0  end
np-237   18  0.0  8.51755E-06  293.0  end
pu-238   18  0.0  2.22102E-06  293.0  end
pu-239   18  0.0  1.31508E-04  293.0  end
pu-240   18  0.0  4.05066E-05  293.0  end
pu-241   18  0.0  2.53462E-05  293.0  end
pu-242   18  0.0  6.51847E-06  293.0  end
am-241   18  0.0  6.23437E-07  293.0  end
am-243   18  0.0  9.43518E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  3.42666E-05  293.0  end
tc-99    19  0.0  4.04857E-05  293.0  end
ru-101   19  0.0  3.91026E-05  293.0  end
rh-103   19  0.0  2.13892E-05  293.0  end
ag-109   19  0.0  3.02721E-06  293.0  end
cs-133   19  0.0  4.16939E-05  293.0  end
nd-143   19  0.0  3.15008E-05  293.0  end
nd-145   19  0.0  2.42500E-05  293.0  end
sm-147   19  0.0  2.00967E-06  293.0  end
sm-149   19  0.0  1.57841E-07  293.0  end
sm-150   19  0.0  9.92606E-06  293.0  end
sm-151   19  0.0  7.34702E-07  293.0  end
sm-152   19  0.0  3.90359E-06  293.0  end
eu-153   19  0.0  3.75341E-06  293.0  end
gd-155   19  0.0  1.96535E-09  293.0  end
u-234    19  0.0  4.78195E-06  293.0  end
u-235    19  0.0  3.80319E-04  293.0  end
u-236    19  0.0  1.02041E-04  293.0  end
u-238    19  0.0  2.14533E-02  293.0  end
np-237   19  0.0  1.06080E-05  293.0  end
pu-238   19  0.0  3.02951E-06  293.0  end
pu-239   19  0.0  1.86207E-04  293.0  end
pu-240   19  0.0  4.54577E-05  293.0  end
pu-241   19  0.0  3.28165E-05  293.0  end
pu-242   19  0.0  6.77733E-06  293.0  end
am-241   19  0.0  8.35494E-07  293.0  end
am-243   19  0.0  1.18983E-06  293.0  end
o        19  0.0  4.58960E-02  293.0  end
mo-95    20  0.0  1.07992E-05  293.0  end
tc-99    20  0.0  1.76762E-05  293.0  end
ru-101   20  0.0  1.60668E-05  293.0  end
rh-103   20  0.0  8.25125E-06  293.0  end
ag-109   20  0.0  7.75062E-07  293.0  end
cs-133   20  0.0  1.84718E-05  293.0  end
nd-143   20  0.0  1.46035E-05  293.0  end
nd-145   20  0.0  1.09672E-05  293.0  end
sm-147   20  0.0  5.27112E-07  293.0  end
sm-149   20  0.0  1.31370E-07  293.0  end
sm-150   20  0.0  3.63945E-06  293.0  end
sm-151   20  0.0  4.57408E-07  293.0  end
sm-152   20  0.0  1.69108E-06  293.0  end
eu-153   20  0.0  1.00906E-06  293.0  end
gd-155   20  0.0  4.44172E-10  293.0  end
u-234    20  0.0  6.53976E-06  293.0  end
u-235    20  0.0  6.47341E-04  293.0  end
u-236    20  0.0  5.69246E-05  293.0  end
u-238    20  0.0  2.17965E-02  293.0  end
np-237   20  0.0  2.86069E-06  293.0  end
pu-238   20  0.0  3.20752E-07  293.0  end
pu-239   20  0.0  1.20509E-04  293.0  end
pu-240   20  0.0  1.59776E-05  293.0  end
pu-241   20  0.0  8.15522E-06  293.0  end
pu-242   20  0.0  6.30115E-07  293.0  end
am-241   20  0.0  9.26971E-08  293.0  end
am-243   20  0.0  4.31533E-08  293.0  end
o        20  0.0  4.58960E-02  293.0  end
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EOF Eed24_f01_id01567_b30.mip

EOF ed24_f01_id01567_b50.mip

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File ed24_f01_id02090_b30.mip

lfd.Nr.: 1 aus sha_alf.mod

mo-95	1	0.0	4.67069E-06	293.0	end
tc-99	1	0.0	1.09863E-05	293.0	end
ru-101	1	0.0	9.76043E-06	293.0	end
rh-103	1	0.0	4.33782E-06	293.0	end
ag-109	1	0.0	2.96840E-07	293.0	end
cs-133	1	0.0	1.14667E-05	293.0	end
nd-143	1	0.0	9.00927E-06	293.0	end
nd-145	1	0.0	6.97408E-06	293.0	end
sm-147	1	0.0	2.19762E-07	293.0	end
sm-149	1	0.0	9.14633E-08	293.0	end
sm-150	1	0.0	2.03663E-06	293.0	end
sm-151	1	0.0	3.17012E-07	293.0	end
sm-152	1	0.0	1.00990E-06	293.0	end
eu-153	1	0.0	4.53614E-07	293.0	end
gd-155	1	0.0	2.04788E-10	293.0	end
u-234	1	0.0	7.22023E-06	293.0	end
u-235	1	0.0	7.38873E-04	293.0	end
u-236	1	0.0	3.73654E-05	293.0	end
u-238	1	0.0	2.19107E-02	293.0	end
np-237	1	0.0	1.05409E-06	293.0	end
pu-238	1	0.0	6.33352E-08	293.0	end
pu-239	1	0.0	6.66489E-05	293.0	end
pu-240	1	0.0	6.76284E-06	293.0	end
pu-241	1	0.0	2.13231E-06	293.0	end
pu-242	1	0.0	1.00259E-07	293.0	end
am-241	1	0.0	1.44253E-08	293.0	end
am-243	1	0.0	3.04791E-09	293.0	end
o	1	0.0	4.58960E-02	293.0	end
mo-95	2	0.0	2.12313E-05	293.0	end
tc-99	2	0.0	2.79087E-05	293.0	end
ru-101	2	0.0	2.55954E-05	293.0	end
rh-103	2	0.0	1.36186E-05	293.0	end
ag-109	2	0.0	1.43798E-06	293.0	end
cs-133	2	0.0	2.91472E-05	293.0	end
nd-143	2	0.0	2.22842E-05	293.0	end
nd-145	2	0.0	1.70912E-05	293.0	end
sm-147	2	0.0	1.21594E-06	293.0	end
sm-149	2	0.0	1.04634E-07	293.0	end
sm-150	2	0.0	6.07782E-06	293.0	end
sm-151	2	0.0	4.44308E-07	293.0	end
sm-152	2	0.0	2.80210E-06	293.0	end
eu-153	2	0.0	1.89643E-06	293.0	end
gd-155	2	0.0	5.57124E-10	293.0	end
u-234	2	0.0	6.03439E-06	293.0	end
u-235	2	0.0	4.99519E-04	293.0	end
u-236	2	0.0	7.82335E-05	293.0	end
u-238	2	0.0	2.17298E-02	293.0	end
np-237	2	0.0	4.56568E-06	293.0	end
pu-238	2	0.0	7.41492E-07	293.0	end
pu-239	2	0.0	1.16328E-04	293.0	end
pu-240	2	0.0	2.54122E-05	293.0	end
pu-241	2	0.0	1.42574E-05	293.0	end
pu-242	2	0.0	2.09726E-06	293.0	end
am-241	2	0.0	2.49228E-07	293.0	end
am-243	2	0.0	1.91755E-07	293.0	end
o	2	0.0	4.58960E-02	293.0	end
mo-95	3	0.0	2.90427E-05	293.0	end
tc-99	3	0.0	3.54266E-05	293.0	end
ru-101	3	0.0	3.30957E-05	293.0	end
rh-103	3	0.0	1.76880E-05	293.0	end
ag-109	3	0.0	2.15539E-06	293.0	end
cs-133	3	0.0	3.68325E-05	293.0	end
nd-143	3	0.0	2.73465E-05	293.0	end
nd-145	3	0.0	2.14648E-05	293.0	end
sm-147	3	0.0	1.78074E-06	293.0	end

File ed24_f01_id02090_b50.mip

lfd.Nr.: 2 aus sha_alf.mod

mo-95	1	0.0	1.26482E-05	293.0	end
tc-99	1	0.0	1.95368E-05	293.0	end
ru-101	1	0.0	1.75918E-05	293.0	end
rh-103	1	0.0	9.00247E-06	293.0	end
ag-109	1	0.0	7.84850E-07	293.0	end
cs-133	1	0.0	2.04575E-05	293.0	end
nd-143	1	0.0	1.60256E-05	293.0	end
nd-145	1	0.0	1.21365E-05	293.0	end
sm-147	1	0.0	6.53922E-07	293.0	end
sm-149	1	0.0	1.00426E-07	293.0	end
sm-150	1	0.0	3.97195E-06	293.0	end
sm-151	1	0.0	3.89219E-07	293.0	end
sm-152	1	0.0	1.93048E-06	293.0	end
eu-153	1	0.0	1.07424E-06	293.0	end
gd-155	1	0.0	3.43221E-10	293.0	end
u-234	1	0.0	6.62234E-06	293.0	end
u-235	1	0.0	6.11882E-04	293.0	end
u-236	1	0.0	5.95161E-05	293.0	end
u-238	1	0.0	2.18235E-02	293.0	end
np-237	1	0.0	2.56224E-06	293.0	end
pu-238	1	0.0	2.82537E-07	293.0	end
pu-239	1	0.0	9.73220E-05	293.0	end
pu-240	1	0.0	1.57889E-05	293.0	end
pu-241	1	0.0	7.44622E-06	293.0	end
pu-242	1	0.0	6.91114E-07	293.0	end
am-241	1	0.0	9.13615E-08	293.0	end
am-243	1	0.0	4.11972E-08	293.0	end
o	1	0.0	4.58960E-02	293.0	end
mo-95	2	0.0	3.98296E-05	293.0	end
tc-99	2	0.0	4.57776E-05	293.0	end
ru-101	2	0.0	4.39881E-05	293.0	end
rh-103	2	0.0	2.30492E-05	293.0	end
ag-109	2	0.0	3.32577E-06	293.0	end
cs-133	2	0.0	4.71892E-05	293.0	end
nd-143	2	0.0	3.33345E-05	293.0	end
nd-145	2	0.0	2.73747E-05	293.0	end
sm-147	2	0.0	2.57287E-06	293.0	end
sm-149	2	0.0	1.02568E-07	293.0	end
sm-150	2	0.0	1.10964E-05	293.0	end
sm-151	2	0.0	5.45081E-07	293.0	end
sm-152	2	0.0	4.54846E-06	293.0	end
eu-153	2	0.0	4.22833E-06	293.0	end
gd-155	2	0.0	1.37673E-09	293.0	end
u-234	2	0.0	4.77306E-06	293.0	end
u-235	2	0.0	2.95379E-04	293.0	end
u-236	2	0.0	1.08742E-04	293.0	end
u-238	2	0.0	2.14917E-02	293.0	end
np-237	2	0.0	9.99246E-06	293.0	end
pu-238	2	0.0	2.99116E-06	293.0	end
pu-239	2	0.0	1.33676E-04	293.0	end
pu-240	2	0.0	4.52922E-05	293.0	end
pu-241	2	0.0	2.87132E-05	293.0	end
pu-242	2	0.0	8.70806E-06	293.0	end
am-241	2	0.0	7.61991E-07	293.0	end
am-243	2	0.0	1.41614E-06	293.0	end
o	2	0.0	4.58960E-02	293.0	end
mo-95	3	0.0	5.06994E-05	293.0	end
tc-99	3	0.0	5.61459E-05	293.0	end
ru-101	3	0.0	5.57179E-05	293.0	end
rh-103	3	0.0	2.79821E-05	293.0	end
ag-109	3	0.0	4.69054E-06	293.0	end
cs-133	3	0.0	5.72281E-05	293.0	end
nd-143	3	0.0	3.79639E-05	293.0	end
nd-145	3	0.0	3.31608E-05	293.0	end
sm-147	3	0.0	3.29644E-06	293.0	end

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sm-149    3  0.0  1.05311E-07  293.0  end
sm-150    3  0.0  8.11454E-06  293.0  end
sm-151    3  0.0  4.89233E-07  293.0  end
sm-152    3  0.0  3.55372E-06  293.0  end
eu-153    3  0.0  2.79184E-06  293.0  end
gd-155    3  0.0  8.37506E-10  293.0  end
u-234     3  0.0  5.50475E-06  293.0  end
u-235     3  0.0  4.07826E-04  293.0  end
u-236     3  0.0  9.26287E-05  293.0  end
u-238     3  0.0  2.16368E-02  293.0  end
np-237    3  0.0  6.71084E-06  293.0  end
pu-238    3  0.0  1.44346E-06  293.0  end
pu-239    3  0.0  1.26732E-04  293.0  end
pu-240    3  0.0  3.40627E-05  293.0  end
pu-241    3  0.0  2.06501E-05  293.0  end
pu-242    3  0.0  4.23479E-06  293.0  end
am-241    3  0.0  4.48617E-07  293.0  end
am-243    3  0.0  5.14189E-07  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  3.66247E-05  293.0  end
tc-99     4  0.0  4.27056E-05  293.0  end
ru-101    4  0.0  4.06791E-05  293.0  end
rh-103    4  0.0  2.14951E-05  293.0  end
ag-109    4  0.0  2.95753E-06  293.0  end
cs-133    4  0.0  4.41455E-05  293.0  end
nd-143    4  0.0  3.16872E-05  293.0  end
nd-145    4  0.0  2.56340E-05  293.0  end
sm-147    4  0.0  2.34093E-06  293.0  end
sm-149    4  0.0  1.03755E-07  293.0  end
sm-150    4  0.0  1.01928E-05  293.0  end
sm-151    4  0.0  5.29238E-07  293.0  end
sm-152    4  0.0  4.25742E-06  293.0  end
eu-153    4  0.0  3.78002E-06  293.0  end
gd-155    4  0.0  1.19767E-09  293.0  end
u-234     4  0.0  4.99050E-06  293.0  end
u-235     4  0.0  3.27069E-04  293.0  end
u-236     4  0.0  1.04426E-04  293.0  end
u-238     4  0.0  2.15373E-02  293.0  end
np-237    4  0.0  8.98879E-06  293.0  end
pu-238    4  0.0  2.45348E-06  293.0  end
pu-239    4  0.0  1.32347E-04  293.0  end
pu-240    4  0.0  4.20805E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end
pu-239    5  0.0  1.33299E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end
pu-242    5  0.0  8.19047E-06  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  3.99245E-05  293.0  end
tc-99     6  0.0  4.58684E-05  293.0  end
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sm-149    3  0.0  9.68565E-08  293.0  end
sm-150    3  0.0  1.42273E-05  293.0  end
sm-151    3  0.0  5.94146E-07  293.0  end
sm-152    3  0.0  5.50897E-06  293.0  end
eu-153    3  0.0  5.85408E-06  293.0  end
gd-155    3  0.0  2.10197E-09  293.0  end
u-234     3  0.0  4.03888E-06  293.0  end
u-235     3  0.0  1.99381E-04  293.0  end
u-236     3  0.0  1.20224E-04  293.0  end
u-238     3  0.0  2.13218E-02  293.0  end
np-237    3  0.0  1.34780E-05  293.0  end
pu-238    3  0.0  5.34761E-06  293.0  end
pu-239    3  0.0  1.34721E-04  293.0  end
pu-240    3  0.0  5.50798E-05  293.0  end
pu-241    3  0.0  3.50511E-05  293.0  end
pu-242    3  0.0  1.51762E-05  293.0  end
am-241    3  0.0  1.04439E-06  293.0  end
am-243    3  0.0  2.99423E-06  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  5.96712E-05  293.0  end
tc-99     4  0.0  6.46007E-05  293.0  end
ru-101    4  0.0  6.60785E-05  293.0  end
rh-103    4  0.0  3.15433E-05  293.0  end
ag-109    4  0.0  5.93158E-06  293.0  end
cs-133    4  0.0  6.50896E-05  293.0  end
nd-143    4  0.0  4.05165E-05  293.0  end
nd-145    4  0.0  3.77725E-05  293.0  end
sm-147    4  0.0  3.77541E-06  293.0  end
sm-149    4  0.0  9.15997E-08  293.0  end
sm-150    4  0.0  1.68313E-05  293.0  end
sm-151    4  0.0  6.31352E-07  293.0  end
sm-152    4  0.0  6.26848E-06  293.0  end
eu-153    4  0.0  7.27784E-06  293.0  end
gd-155    4  0.0  2.85189E-09  293.0  end
u-234     4  0.0  3.44279E-06  293.0  end
u-235     4  0.0  1.34474E-04  293.0  end
u-236     4  0.0  1.25700E-04  293.0  end
u-238     4  0.0  2.11573E-02  293.0  end
np-237    4  0.0  1.62253E-05  293.0  end
pu-238    4  0.0  7.90604E-06  293.0  end
pu-239    4  0.0  1.32944E-04  293.0  end
pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  8.76042E-06  293.0  end
pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  3.94419E-05  293.0  end
pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  5.58383E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  6.36571E-05  293.0  end
tc-99     6  0.0  6.83111E-05  293.0  end
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ru-101    6  0.0  4.40871E-05  293.0  end
rh-103    6  0.0  2.30946E-05  293.0  end
ag-109    6  0.0  3.33693E-06  293.0  end
cs-133    6  0.0  4.72788E-05  293.0  end
nd-143    6  0.0  3.33814E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end
sm-147    7  0.0  2.60653E-06  293.0  end
sm-149    7  0.0  1.02369E-07  293.0  end
sm-150    7  0.0  1.12305E-05  293.0  end
sm-151    7  0.0  5.47362E-07  293.0  end
sm-152    7  0.0  4.59108E-06  293.0  end
eu-153    7  0.0  4.29579E-06  293.0  end
gd-155    7  0.0  1.40447E-09  293.0  end
u-234     7  0.0  4.74102E-06  293.0  end
u-235     7  0.0  2.90831E-04  293.0  end
u-236     7  0.0  1.09344E-04  293.0  end
u-238     7  0.0  2.14850E-02  293.0  end
np-237    7  0.0  1.01420E-05  293.0  end
pu-238    7  0.0  3.07627E-06  293.0  end
pu-239    7  0.0  1.33828E-04  293.0  end
pu-240    7  0.0  4.57545E-05  293.0  end
pu-241    7  0.0  2.90311E-05  293.0  end
pu-242    7  0.0  8.94661E-06  293.0  end
am-241    7  0.0  7.75585E-07  293.0  end
am-243    7  0.0  1.47055E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  3.95792E-05  293.0  end
tc-99     8  0.0  4.55378E-05  293.0  end
ru-101    8  0.0  4.37271E-05  293.0  end
rh-103    8  0.0  2.29293E-05  293.0  end
ag-109    8  0.0  3.29641E-06  293.0  end
cs-133    8  0.0  4.69526E-05  293.0  end
nd-143    8  0.0  3.32102E-05  293.0  end
nd-145    8  0.0  2.72393E-05  293.0  end
sm-147    8  0.0  2.55497E-06  293.0  end
sm-149    8  0.0  1.02671E-07  293.0  end
sm-150    8  0.0  1.10254E-05  293.0  end
sm-151    8  0.0  5.43866E-07  293.0  end
sm-152    8  0.0  4.52584E-06  293.0  end
eu-153    8  0.0  4.19271E-06  293.0  end
gd-155    8  0.0  1.36216E-09  293.0  end
u-234     8  0.0  4.79005E-06  293.0  end
u-235     8  0.0  2.97803E-04  293.0  end
u-236     8  0.0  1.08419E-04  293.0  end
u-238     8  0.0  2.14952E-02  293.0  end
np-237    8  0.0  9.91337E-06  293.0  end
pu-238    8  0.0  2.94667E-06  293.0  end
pu-239    8  0.0  1.33592E-04  293.0  end
pu-240    8  0.0  4.50459E-05  293.0  end
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ru-101    6  0.0  7.09080E-05  293.0  end
rh-103    6  0.0  3.29433E-05  293.0  end
ag-109    6  0.0  6.50953E-06  293.0  end
cs-133    6  0.0  6.84264E-05  293.0  end
nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  4.00320E-05  293.0  end
sm-147    7  0.0  3.96292E-06  293.0  end
sm-149    7  0.0  8.86158E-08  293.0  end
sm-150    7  0.0  1.81246E-05  293.0  end
sm-151    7  0.0  6.48610E-07  293.0  end
sm-152    7  0.0  6.64004E-06  293.0  end
eu-153    7  0.0  8.00504E-06  293.0  end
gd-155    7  0.0  3.27190E-09  293.0  end
u-234     7  0.0  3.14936E-06  293.0  end
u-235     7  0.0  1.07033E-04  293.0  end
u-236     7  0.0  1.27003E-04  293.0  end
u-238     7  0.0  2.10638E-02  293.0  end
np-237    7  0.0  1.75686E-05  293.0  end
pu-238    7  0.0  9.36658E-06  293.0  end
pu-239    7  0.0  1.31543E-04  293.0  end
pu-240    7  0.0  6.41029E-05  293.0  end
pu-241    7  0.0  3.98988E-05  293.0  end
pu-242    7  0.0  2.59358E-05  293.0  end
am-241    7  0.0  1.24514E-06  293.0  end
am-243    7  0.0  6.08700E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  6.35416E-05  293.0  end
tc-99     8  0.0  6.82041E-05  293.0  end
ru-101    8  0.0  7.07660E-05  293.0  end
rh-103    8  0.0  3.29044E-05  293.0  end
ag-109    8  0.0  6.49260E-06  293.0  end
cs-133    8  0.0  6.83313E-05  293.0  end
nd-143    8  0.0  4.12258E-05  293.0  end
nd-145    8  0.0  3.97090E-05  293.0  end
sm-147    8  0.0  3.93831E-06  293.0  end
sm-149    8  0.0  8.90389E-08  293.0  end
sm-150    8  0.0  1.79393E-05  293.0  end
sm-151    8  0.0  6.46165E-07  293.0  end
sm-152    8  0.0  6.58693E-06  293.0  end
eu-153    8  0.0  7.90004E-06  293.0  end
gd-155    8  0.0  3.20910E-09  293.0  end
u-234     8  0.0  3.19131E-06  293.0  end
u-235     8  0.0  1.10770E-04  293.0  end
u-236     8  0.0  1.26880E-04  293.0  end
u-238     8  0.0  2.10779E-02  293.0  end
np-237    8  0.0  1.73813E-05  293.0  end
pu-238    8  0.0  9.14952E-06  293.0  end
pu-239    8  0.0  1.31758E-04  293.0  end
pu-240    8  0.0  6.37523E-05  293.0  end
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pu-241    8  0.0  2.85432E-05  293.0  end
pu-242    8  0.0  8.58315E-06  293.0  end
am-241    8  0.0  7.54760E-07  293.0  end
am-243    8  0.0  1.38782E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  3.85161E-05  293.0  end
tc-99     9  0.0  4.45193E-05  293.0  end
ru-101    9  0.0  4.26241E-05  293.0  end
rh-103    9  0.0  2.24167E-05  293.0  end
ag-109    9  0.0  3.17286E-06  293.0  end
cs-133    9  0.0  4.59459E-05  293.0  end
nd-143    9  0.0  3.26739E-05  293.0  end
nd-145    9  0.0  2.66628E-05  293.0  end
sm-147    9  0.0  2.47847E-06  293.0  end
sm-149    9  0.0  1.03087E-07  293.0  end
sm-150    9  0.0  1.07246E-05  293.0  end
sm-151    9  0.0  5.38669E-07  293.0  end
sm-152    9  0.0  4.42961E-06  293.0  end
eu-153    9  0.0  4.04254E-06  293.0  end
gd-155    9  0.0  1.30144E-09  293.0  end
u-234     9  0.0  4.86219E-06  293.0  end
u-235     9  0.0  3.08189E-04  293.0  end
u-236     9  0.0  1.07020E-04  293.0  end
u-238     9  0.0  2.15106E-02  293.0  end
np-237    9  0.0  9.57877E-06  293.0  end
pu-238    9  0.0  2.76242E-06  293.0  end
pu-239    9  0.0  1.33196E-04  293.0  end
pu-240    9  0.0  4.39911E-05  293.0  end
pu-241    9  0.0  2.78109E-05  293.0  end
pu-242    9  0.0  8.06416E-06  293.0  end
am-241    9  0.0  7.23880E-07  293.0  end
am-243    9  0.0  1.27181E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  3.77225E-05  293.0  end
tc-99    10  0.0  4.37585E-05  293.0  end
ru-101   10  0.0  4.18054E-05  293.0  end
rh-103   10  0.0  2.20313E-05  293.0  end
ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
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pu-241    8  0.0  3.97436E-05  293.0  end
pu-242    8  0.0  2.53525E-05  293.0  end
am-241    8  0.0  1.24005E-06  293.0  end
am-243    8  0.0  5.90529E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  6.25017E-05  293.0  end
tc-99     9  0.0  6.72392E-05  293.0  end
ru-101    9  0.0  6.94929E-05  293.0  end
rh-103    9  0.0  3.25501E-05  293.0  end
ag-109    9  0.0  6.34060E-06  293.0  end
cs-133    9  0.0  6.74704E-05  293.0  end
nd-143    9  0.0  4.10587E-05  293.0  end
nd-145    9  0.0  3.91922E-05  293.0  end
sm-147    9  0.0  3.89739E-06  293.0  end
sm-149    9  0.0  8.97077E-08  293.0  end
sm-150    9  0.0  1.76431E-05  293.0  end
sm-151    9  0.0  6.42227E-07  293.0  end
sm-152    9  0.0  6.50205E-06  293.0  end
eu-153    9  0.0  7.73280E-06  293.0  end
gd-155    9  0.0  3.11030E-09  293.0  end
u-234     9  0.0  3.25841E-06  293.0  end
u-235     9  0.0  1.16875E-04  293.0  end
u-236     9  0.0  1.26635E-04  293.0  end
u-238     9  0.0  2.10999E-02  293.0  end
np-237    9  0.0  1.70808E-05  293.0  end
pu-238    9  0.0  8.80797E-06  293.0  end
pu-239    9  0.0  1.32088E-04  293.0  end
pu-240    9  0.0  6.31770E-05  293.0  end
pu-241    9  0.0  3.94804E-05  293.0  end
pu-242    9  0.0  2.44361E-05  293.0  end
am-241    9  0.0  1.23098E-06  293.0  end
am-243    9  0.0  5.62282E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  6.17218E-05  293.0  end
tc-99    10  0.0  6.65140E-05  293.0  end
ru-101   10  0.0  6.85447E-05  293.0  end
rh-103   10  0.0  3.22787E-05  293.0  end
ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
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u-235     11  0.0  3.22255E-04  293.0  end
u-236     11  0.0  1.05095E-04  293.0  end
u-238     11  0.0  2.15307E-02  293.0  end
np-237    11  0.0  9.13701E-06  293.0  end
pu-238    11  0.0  2.52920E-06  293.0  end
pu-239    11  0.0  1.32580E-04  293.0  end
pu-240    11  0.0  4.25667E-05  293.0  end
pu-241    11  0.0  2.68115E-05  293.0  end
pu-242    11  0.0  7.40231E-06  293.0  end
am-241    11  0.0  6.82477E-07  293.0  end
am-243    11  0.0  1.12799E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  3.63734E-05  293.0  end
tc-99     12  0.0  4.24647E-05  293.0  end
ru-101    12  0.0  4.04227E-05  293.0  end
rh-103    12  0.0  2.13720E-05  293.0  end
ag-109    12  0.0  2.92939E-06  293.0  end
cs-133    12  0.0  4.39058E-05  293.0  end
nd-143    12  0.0  3.15532E-05  293.0  end
nd-145    12  0.0  2.54971E-05  293.0  end
sm-147    12  0.0  2.32256E-06  293.0  end
sm-149    12  0.0  1.03836E-07  293.0  end
sm-150    12  0.0  1.01227E-05  293.0  end
sm-151    12  0.0  5.27971E-07  293.0  end
sm-152    12  0.0  4.23447E-06  293.0  end
eu-153    12  0.0  3.74564E-06  293.0  end
gd-155    12  0.0  1.18433E-09  293.0  end
u-234     12  0.0  5.00751E-06  293.0  end
u-235     12  0.0  3.29615E-04  293.0  end
u-236     12  0.0  1.04069E-04  293.0  end
u-238     12  0.0  2.15407E-02  293.0  end
np-237    12  0.0  8.91104E-06  293.0  end
pu-238    12  0.0  2.41426E-06  293.0  end
pu-239    12  0.0  1.32218E-04  293.0  end
pu-240    12  0.0  4.18236E-05  293.0  end
pu-241    12  0.0  2.62856E-05  293.0  end
pu-242    12  0.0  7.07391E-06  293.0  end
am-241    12  0.0  6.61056E-07  293.0  end
am-243    12  0.0  1.05840E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  3.56166E-05  293.0  end
tc-99     13  0.0  4.17389E-05  293.0  end
ru-101    13  0.0  3.96526E-05  293.0  end
rh-103    13  0.0  2.09998E-05  293.0  end
ag-109    13  0.0  2.84526E-06  293.0  end
cs-133    13  0.0  4.31827E-05  293.0  end
nd-143    13  0.0  3.11452E-05  293.0  end
nd-145    13  0.0  2.50844E-05  293.0  end
sm-147    13  0.0  2.26709E-06  293.0  end
sm-149    13  0.0  1.04070E-07  293.0  end
sm-150    13  0.0  9.91201E-06  293.0  end
sm-151    13  0.0  5.24130E-07  293.0  end
sm-152    13  0.0  4.16521E-06  293.0  end
eu-153    13  0.0  3.64271E-06  293.0  end
gd-155    13  0.0  1.14474E-09  293.0  end
u-234     13  0.0  5.05879E-06  293.0  end
u-235     13  0.0  3.37337E-04  293.0  end
u-236     13  0.0  1.02977E-04  293.0  end
u-238     13  0.0  2.15511E-02  293.0  end
np-237    13  0.0  8.67768E-06  293.0  end
pu-238    13  0.0  2.29860E-06  293.0  end
pu-239    13  0.0  1.31808E-04  293.0  end
pu-240    13  0.0  4.10458E-05  293.0  end
pu-241    13  0.0  2.57321E-05  293.0  end
pu-242    13  0.0  6.74198E-06  293.0  end
am-241    13  0.0  6.38790E-07  293.0  end
am-243    13  0.0  9.89299E-07  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  3.44576E-05  293.0  end
tc-99     14  0.0  4.06272E-05  293.0  end
ru-101    14  0.0  3.84781E-05  293.0  end
rh-103    14  0.0  2.04246E-05  293.0  end
ag-109    14  0.0  2.71820E-06  293.0  end
cs-133    14  0.0  4.20714E-05  293.0  end
nd-143    14  0.0  3.05087E-05  293.0  end
nd-145    14  0.0  2.44504E-05  293.0  end
sm-147    14  0.0  2.18173E-06  293.0  end
```

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u-235     11  0.0  1.24735E-04  293.0  end
u-236     11  0.0  1.26254E-04  293.0  end
u-238     11  0.0  2.11266E-02  293.0  end
np-237    11  0.0  1.66955E-05  293.0  end
pu-238    11  0.0  8.39082E-06  293.0  end
pu-239    11  0.0  1.32485E-04  293.0  end
pu-240    11  0.0  6.24273E-05  293.0  end
pu-241    11  0.0  3.91285E-05  293.0  end
pu-242    11  0.0  2.33174E-05  293.0  end
am-241    11  0.0  1.21804E-06  293.0  end
am-243    11  0.0  5.28382E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  6.05774E-05  293.0  end
tc-99     12  0.0  6.54472E-05  293.0  end
ru-101    12  0.0  6.71636E-05  293.0  end
rh-103    12  0.0  3.18720E-05  293.0  end
ag-109    12  0.0  6.06172E-06  293.0  end
cs-133    12  0.0  6.58576E-05  293.0  end
nd-143    12  0.0  4.07041E-05  293.0  end
nd-145    12  0.0  3.82289E-05  293.0  end
sm-147    12  0.0  3.81610E-06  293.0  end
sm-149    12  0.0  9.10122E-08  293.0  end
sm-150    12  0.0  1.70919E-05  293.0  end
sm-151    12  0.0  6.34925E-07  293.0  end
sm-152    12  0.0  6.34352E-06  293.0  end
eu-153    12  0.0  7.42345E-06  293.0  end
gd-155    12  0.0  2.93373E-09  293.0  end
u-234     12  0.0  3.38349E-06  293.0  end
u-235     12  0.0  1.28685E-04  293.0  end
u-236     12  0.0  1.26040E-04  293.0  end
u-238     12  0.0  2.11393E-02  293.0  end
np-237    12  0.0  1.65004E-05  293.0  end
pu-238    12  0.0  8.19019E-06  293.0  end
pu-239    12  0.0  1.32679E-04  293.0  end
pu-240    12  0.0  6.20454E-05  293.0  end
pu-241    12  0.0  3.89470E-05  293.0  end
pu-242    12  0.0  2.27791E-05  293.0  end
am-241    12  0.0  1.21104E-06  293.0  end
am-243    12  0.0  5.12320E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  5.97211E-05  293.0  end
tc-99     13  0.0  6.46473E-05  293.0  end
ru-101    13  0.0  6.61380E-05  293.0  end
rh-103    13  0.0  3.15615E-05  293.0  end
ag-109    13  0.0  5.93872E-06  293.0  end
cs-133    13  0.0  6.51320E-05  293.0  end
nd-143    13  0.0  4.05272E-05  293.0  end
nd-145    13  0.0  3.77977E-05  293.0  end
sm-147    13  0.0  3.77769E-06  293.0  end
sm-149    13  0.0  9.15705E-08  293.0  end
sm-150    13  0.0  1.68457E-05  293.0  end
sm-151    13  0.0  6.31557E-07  293.0  end
sm-152    13  0.0  6.27260E-06  293.0  end
eu-153    13  0.0  7.28585E-06  293.0  end
gd-155    13  0.0  2.85644E-09  293.0  end
u-234     13  0.0  3.43952E-06  293.0  end
u-235     13  0.0  1.34152E-04  293.0  end
u-236     13  0.0  1.25719E-04  293.0  end
u-238     13  0.0  2.11563E-02  293.0  end
np-237    13  0.0  1.62400E-05  293.0  end
pu-238    13  0.0  7.92157E-06  293.0  end
pu-239    13  0.0  1.32930E-04  293.0  end
pu-240    13  0.0  6.15186E-05  293.0  end
pu-241    13  0.0  3.86844E-05  293.0  end
pu-242    13  0.0  2.20594E-05  293.0  end
am-241    13  0.0  1.20082E-06  293.0  end
am-243    13  0.0  4.90995E-06  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  5.83173E-05  293.0  end
tc-99     14  0.0  6.33341E-05  293.0  end
ru-101    14  0.0  6.44712E-05  293.0  end
rh-103    14  0.0  3.10423E-05  293.0  end
ag-109    14  0.0  5.73898E-06  293.0  end
cs-133    14  0.0  6.39341E-05  293.0  end
nd-143    14  0.0  4.02110E-05  293.0  end
nd-145    14  0.0  3.70878E-05  293.0  end
sm-147    14  0.0  3.71195E-06  293.0  end
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sm-149   14  0.0  1.04399E-07  293.0  end
sm-150   14  0.0  9.59030E-06  293.0  end
sm-151   14  0.0  5.18167E-07  293.0  end
sm-152   14  0.0  4.05863E-06  293.0  end
eu-153   14  0.0  3.48682E-06  293.0  end
gd-155   14  0.0  1.08567E-09  293.0  end
u-234    14  0.0  5.13750E-06  293.0  end
u-235    14  0.0  3.49325E-04  293.0  end
u-236    14  0.0  1.01275E-04  293.0  end
u-238    14  0.0  2.15669E-02  293.0  end
np-237   14  0.0  8.32254E-06  293.0  end
pu-238   14  0.0  2.12847E-06  293.0  end
pu-239   14  0.0  1.31120E-04  293.0  end
pu-240   14  0.0  3.98435E-05  293.0  end
pu-241   14  0.0  2.48695E-05  293.0  end
pu-242   14  0.0  6.25093E-06  293.0  end
am-241   14  0.0  6.04673E-07  293.0  end
am-243   14  0.0  8.89528E-07  293.0  end
o        14  0.0  4.58960E-02  293.0  end
mo-95    15  0.0  3.26208E-05  293.0  end
tc-99    15  0.0  3.88633E-05  293.0  end
ru-101   15  0.0  3.66334E-05  293.0  end
rh-103   15  0.0  1.95056E-05  293.0  end
ag-109   15  0.0  2.52149E-06  293.0  end
cs-133   15  0.0  4.03024E-05  293.0  end
nd-143   15  0.0  2.94693E-05  293.0  end
nd-145   15  0.0  2.34409E-05  293.0  end
sm-147   15  0.0  2.04581E-06  293.0  end
sm-149   15  0.0  1.04818E-07  293.0  end
sm-150   15  0.0  9.08430E-06  293.0  end
sm-151   15  0.0  5.08550E-07  293.0  end
sm-152   15  0.0  3.88868E-06  293.0  end
eu-153   15  0.0  3.24470E-06  293.0  end
gd-155   15  0.0  9.96413E-10  293.0  end
u-234    15  0.0  5.26210E-06  293.0  end
u-235    15  0.0  3.68717E-04  293.0  end
u-236    15  0.0  9.84635E-05  293.0  end
u-238    15  0.0  2.15906E-02  293.0  end
np-237   15  0.0  7.76651E-06  293.0  end
pu-238   15  0.0  1.87619E-06  293.0  end
pu-239   15  0.0  1.29853E-04  293.0  end
pu-240   15  0.0  3.79097E-05  293.0  end
pu-241   15  0.0  2.34701E-05  293.0  end
pu-242   15  0.0  5.51600E-06  293.0  end
am-241   15  0.0  5.50895E-07  293.0  end
am-243   15  0.0  7.45982E-07  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  2.99195E-05  293.0  end
tc-99    16  0.0  3.62688E-05  293.0  end
ru-101   16  0.0  3.39560E-05  293.0  end
rh-103   16  0.0  1.81361E-05  293.0  end
ag-109   16  0.0  2.24298E-06  293.0  end
cs-133   16  0.0  3.76852E-05  293.0  end
nd-143   16  0.0  2.78782E-05  293.0  end
nd-145   16  0.0  2.19504E-05  293.0  end
sm-147   16  0.0  1.84561E-06  293.0  end
sm-149   16  0.0  1.05235E-07  293.0  end
sm-150   16  0.0  8.35010E-06  293.0  end
sm-151   16  0.0  4.94038E-07  293.0  end
sm-152   16  0.0  3.63625E-06  293.0  end
eu-153   16  0.0  2.90044E-06  293.0  end
gd-155   16  0.0  8.74616E-10  293.0  end
u-234    16  0.0  5.44532E-06  293.0  end
u-235    16  0.0  3.98079E-04  293.0  end
u-236    16  0.0  9.41026E-05  293.0  end
u-238    16  0.0  2.16255E-02  293.0  end
np-237   16  0.0  6.96587E-06  293.0  end
pu-238   16  0.0  1.54255E-06  293.0  end
pu-239   16  0.0  1.27582E-04  293.0  end
pu-240   16  0.0  3.50137E-05  293.0  end
pu-241   16  0.0  2.13511E-05  293.0  end
pu-242   16  0.0  4.53056E-06  293.0  end
am-241   16  0.0  4.73250E-07  293.0  end
am-243   16  0.0  5.65454E-07  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  2.55024E-05  293.0  end
tc-99    17  0.0  3.20226E-05  293.0  end
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sm-149   14  0.0  9.22134E-08  293.0  end
sm-150   14  0.0  1.64405E-05  293.0  end
sm-151   14  0.0  6.25396E-07  293.0  end
sm-152   14  0.0  6.15690E-06  293.0  end
eu-153   14  0.0  7.06000E-06  293.0  end
gd-155   14  0.0  2.72474E-09  293.0  end
u-234    14  0.0  3.53182E-06  293.0  end
u-235    14  0.0  1.43388E-04  293.0  end
u-236    14  0.0  1.25122E-04  293.0  end
u-238    14  0.0  2.11834E-02  293.0  end
np-237   14  0.0  1.58527E-05  293.0  end
pu-238   14  0.0  7.48969E-06  293.0  end
pu-239   14  0.0  1.33284E-04  293.0  end
pu-240   14  0.0  6.06508E-05  293.0  end
pu-241   14  0.0  3.81956E-05  293.0  end
pu-242   14  0.0  2.09077E-05  293.0  end
am-241   14  0.0  1.18227E-06  293.0  end
am-243   14  0.0  4.56963E-06  293.0  end
o        14  0.0  4.58960E-02  293.0  end
mo-95    15  0.0  5.59766E-05  293.0  end
tc-99    15  0.0  6.11354E-05  293.0  end
ru-101   15  0.0  6.17305E-05  293.0  end
rh-103   15  0.0  3.01438E-05  293.0  end
ag-109   15  0.0  5.41006E-06  293.0  end
cs-133   15  0.0  6.19087E-05  293.0  end
nd-143   15  0.0  3.96147E-05  293.0  end
nd-145   15  0.0  3.58942E-05  293.0  end
sm-147   15  0.0  3.59443E-06  293.0  end
sm-149   15  0.0  9.35183E-08  293.0  end
sm-150   15  0.0  1.57616E-05  293.0  end
sm-151   15  0.0  6.15679E-07  293.0  end
sm-152   15  0.0  5.96088E-06  293.0  end
eu-153   15  0.0  6.68553E-06  293.0  end
gd-155   15  0.0  2.51946E-09  293.0  end
u-234    15  0.0  3.68665E-06  293.0  end
u-235    15  0.0  1.59551E-04  293.0  end
u-236    15  0.0  1.23904E-04  293.0  end
u-238    15  0.0  2.12279E-02  293.0  end
np-237   15  0.0  1.51594E-05  293.0  end
pu-238   15  0.0  6.79175E-06  293.0  end
pu-239   15  0.0  1.33837E-04  293.0  end
pu-240   15  0.0  5.90808E-05  293.0  end
pu-241   15  0.0  3.73309E-05  293.0  end
pu-242   15  0.0  1.90485E-05  293.0  end
am-241   15  0.0  1.14652E-06  293.0  end
am-243   15  0.0  4.03851E-06  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  5.23242E-05  293.0  end
tc-99    16  0.0  5.76858E-05  293.0  end
ru-101   16  0.0  5.75451E-05  293.0  end
rh-103   16  0.0  2.86662E-05  293.0  end
ag-109   16  0.0  4.90848E-06  293.0  end
cs-133   16  0.0  5.86844E-05  293.0  end
nd-143   16  0.0  3.85167E-05  293.0  end
nd-145   16  0.0  3.40075E-05  293.0  end
sm-147   16  0.0  3.39266E-06  293.0  end
sm-149   16  0.0  9.58510E-08  293.0  end
sm-150   16  0.0  1.46999E-05  293.0  end
sm-151   16  0.0  6.00904E-07  293.0  end
sm-152   16  0.0  5.64916E-06  293.0  end
eu-153   16  0.0  6.10788E-06  293.0  end
gd-155   16  0.0  2.22590E-09  293.0  end
u-234    16  0.0  3.93006E-06  293.0  end
u-235    16  0.0  1.86627E-04  293.0  end
u-236    16  0.0  1.21491E-04  293.0  end
u-238    16  0.0  2.12937E-02  293.0  end
np-237   16  0.0  1.40001E-05  293.0  end
pu-238   16  0.0  5.77184E-06  293.0  end
pu-239   16  0.0  1.34521E-04  293.0  end
pu-240   16  0.0  5.63694E-05  293.0  end
pu-241   16  0.0  3.58101E-05  293.0  end
pu-242   16  0.0  1.63183E-05  293.0  end
am-241   16  0.0  1.07879E-06  293.0  end
am-243   16  0.0  3.29464E-06  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  4.65569E-05  293.0  end
tc-99    17  0.0  5.22062E-05  293.0  end
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ru-101   17  0.0  2.96603E-05  293.0  end
rh-103   17  0.0  1.58586E-05  293.0  end
ag-109   17  0.0  1.81599E-06  293.0  end
cs-133   17  0.0  3.33671E-05  293.0  end
nd-143   17  0.0  2.51233E-05  293.0  end
nd-145   17  0.0  1.94933E-05  293.0  end
sm-147   17  0.0  1.52096E-06  293.0  end
sm-149   17  0.0  1.05319E-07  293.0  end
sm-150   17  0.0  7.17686E-06  293.0  end
sm-151   17  0.0  4.69348E-07  293.0  end
sm-152   17  0.0  3.21675E-06  293.0  end
eu-153   17  0.0  2.36941E-06  293.0  end
gd-155   17  0.0  6.99396E-10  293.0  end
u-234    17  0.0  5.74484E-06  293.0  end
u-235    17  0.0  4.48304E-04  293.0  end
u-236    17  0.0  8.63882E-05  293.0  end
u-238    17  0.0  2.16799E-02  293.0  end
np-237   17  0.0  5.70675E-06  293.0  end
pu-238   17  0.0  1.08656E-06  293.0  end
pu-239   17  0.0  1.22672E-04  293.0  end
pu-240   17  0.0  3.01727E-05  293.0  end
pu-241   17  0.0  1.77719E-05  293.0  end
pu-242   17  0.0  3.15687E-06  293.0  end
am-241   17  0.0  3.53101E-07  293.0  end
am-243   17  0.0  3.40169E-07  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  1.73104E-05  293.0  end
tc-99    18  0.0  2.41222E-05  293.0  end
ru-101   18  0.0  2.22734E-05  293.0  end
rh-103   18  0.0  1.19898E-05  293.0  end
ag-109   18  0.0  1.29862E-06  293.0  end
cs-133   18  0.0  2.51558E-05  293.0  end
nd-143   18  0.0  1.97172E-05  293.0  end
nd-145   18  0.0  1.47806E-05  293.0  end
sm-147   18  0.0  9.06763E-07  293.0  end
sm-149   18  0.0  1.42348E-07  293.0  end
sm-150   18  0.0  5.28886E-06  293.0  end
sm-151   18  0.0  5.37314E-07  293.0  end
sm-152   18  0.0  2.34710E-06  293.0  end
eu-153   18  0.0  1.64874E-06  293.0  end
gd-155   18  0.0  7.01769E-10  293.0  end
u-234    18  0.0  6.02958E-06  293.0  end
u-235    18  0.0  5.63255E-04  293.0  end
u-236    18  0.0  7.20874E-05  293.0  end
u-238    18  0.0  2.17085E-02  293.0  end
np-237   18  0.0  4.70199E-06  293.0  end
pu-238   18  0.0  7.31742E-07  293.0  end
pu-239   18  0.0  1.45650E-04  293.0  end
pu-240   18  0.0  2.42397E-05  293.0  end
pu-241   18  0.0  1.46019E-05  293.0  end
pu-242   18  0.0  1.61382E-06  293.0  end
am-241   18  0.0  2.28391E-07  293.0  end
am-243   18  0.0  1.58691E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  3.60489E-06  293.0  end
tc-99    19  0.0  9.62205E-06  293.0  end
ru-101   19  0.0  8.62330E-06  293.0  end
rh-103   19  0.0  3.72052E-06  293.0  end
ag-109   19  0.0  2.80964E-07  293.0  end
cs-133   19  0.0  1.00124E-05  293.0  end
nd-143   19  0.0  7.82217E-06  293.0  end
nd-145   19  0.0  6.11608E-06  293.0  end
sm-147   19  0.0  1.66025E-07  293.0  end
sm-149   19  0.0  1.12591E-07  293.0  end
sm-150   19  0.0  1.77893E-06  293.0  end
sm-151   19  0.0  3.39708E-07  293.0  end
sm-152   19  0.0  8.48281E-07  293.0  end
eu-153   19  0.0  4.06906E-07  293.0  end
gd-155   19  0.0  2.38783E-10  293.0  end
u-234    19  0.0  7.18904E-06  293.0  end
u-235    19  0.0  7.63846E-04  293.0  end
u-236    19  0.0  3.50434E-05  293.0  end
u-238    19  0.0  2.18987E-02  293.0  end
np-237   19  0.0  1.12639E-06  293.0  end
pu-238   19  0.0  6.67749E-08  293.0  end
pu-239   19  0.0  7.78525E-05  293.0  end
pu-240   19  0.0  6.56349E-06  293.0  end
```

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ru-101   17  0.0  5.11495E-05  293.0  end
rh-103   17  0.0  2.61716E-05  293.0  end
ag-109   17  0.0  4.15057E-06  293.0  end
cs-133   17  0.0  5.34588E-05  293.0  end
nd-143   17  0.0  3.63853E-05  293.0  end
nd-145   17  0.0  3.09781E-05  293.0  end
sm-147   17  0.0  3.03533E-06  293.0  end
sm-149   17  0.0  9.92769E-08  293.0  end
sm-150   17  0.0  1.30259E-05  293.0  end
sm-151   17  0.0  5.76253E-07  293.0  end
sm-152   17  0.0  5.14759E-06  293.0  end
eu-153   17  0.0  5.21793E-06  293.0  end
gd-155   17  0.0  1.80414E-09  293.0  end
u-234    17  0.0  4.31779E-06  293.0  end
u-235    17  0.0  2.33815E-04  293.0  end
u-236    17  0.0  1.16441E-04  293.0  end
u-238    17  0.0  2.13901E-02  293.0  end
np-237   17  0.0  1.21430E-05  293.0  end
pu-238   17  0.0  4.35058E-06  293.0  end
pu-239   17  0.0  1.34861E-04  293.0  end
pu-240   17  0.0  5.15750E-05  293.0  end
pu-241   17  0.0  3.28873E-05  293.0  end
pu-242   17  0.0  1.24681E-05  293.0  end
am-241   17  0.0  9.45989E-07  293.0  end
am-243   17  0.0  2.30830E-06  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  3.42666E-05  293.0  end
tc-99    18  0.0  4.04857E-05  293.0  end
ru-101   18  0.0  3.91026E-05  293.0  end
rh-103   18  0.0  2.13892E-05  293.0  end
ag-109   18  0.0  3.02721E-06  293.0  end
cs-133   18  0.0  4.16939E-05  293.0  end
nd-143   18  0.0  3.15008E-05  293.0  end
nd-145   18  0.0  2.42500E-05  293.0  end
sm-147   18  0.0  2.00967E-06  293.0  end
sm-149   18  0.0  1.57841E-07  293.0  end
sm-150   18  0.0  9.92606E-06  293.0  end
sm-151   18  0.0  7.34702E-07  293.0  end
sm-152   18  0.0  3.90359E-06  293.0  end
eu-153   18  0.0  3.75341E-06  293.0  end
gd-155   18  0.0  1.96535E-09  293.0  end
u-234    18  0.0  4.78195E-06  293.0  end
u-235    18  0.0  3.80319E-04  293.0  end
u-236    18  0.0  1.02041E-04  293.0  end
u-238    18  0.0  2.14533E-02  293.0  end
np-237   18  0.0  1.06080E-05  293.0  end
pu-238   18  0.0  3.02951E-06  293.0  end
pu-239   18  0.0  1.86207E-04  293.0  end
pu-240   18  0.0  4.54577E-05  293.0  end
pu-241   18  0.0  3.28165E-05  293.0  end
pu-242   18  0.0  6.77733E-06  293.0  end
am-241   18  0.0  8.35494E-07  293.0  end
am-243   18  0.0  1.18983E-06  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  1.07992E-05  293.0  end
tc-99    19  0.0  1.76762E-05  293.0  end
ru-101   19  0.0  1.60668E-05  293.0  end
rh-103   19  0.0  8.25125E-06  293.0  end
ag-109   19  0.0  7.75062E-07  293.0  end
cs-133   19  0.0  1.84718E-05  293.0  end
nd-143   19  0.0  1.46035E-05  293.0  end
nd-145   19  0.0  1.09672E-05  293.0  end
sm-147   19  0.0  5.27112E-07  293.0  end
sm-149   19  0.0  1.31370E-07  293.0  end
sm-150   19  0.0  3.63945E-06  293.0  end
sm-151   19  0.0  4.57408E-07  293.0  end
sm-152   19  0.0  1.69108E-06  293.0  end
eu-153   19  0.0  1.00906E-06  293.0  end
gd-155   19  0.0  4.44172E-10  293.0  end
u-234    19  0.0  6.53976E-06  293.0  end
u-235    19  0.0  6.47341E-04  293.0  end
u-236    19  0.0  5.69246E-05  293.0  end
u-238    19  0.0  2.17965E-02  293.0  end
np-237   19  0.0  2.86069E-06  293.0  end
pu-238   19  0.0  3.20752E-07  293.0  end
pu-239   19  0.0  1.20509E-04  293.0  end
pu-240   19  0.0  1.59776E-05  293.0  end
```

```
 pu-241   19  0.0  2.16806E-06  293.0  end
 pu-242   19  0.0  8.57529E-08  293.0  end
 am-241   19  0.0  1.30160E-08  293.0  end
 am-243   19  0.0  2.92719E-09  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id02090_b30.mip

```
 pu-241   19  0.0  8.15522E-06  293.0  end
 pu-242   19  0.0  6.30115E-07  293.0  end
 am-241   19  0.0  9.26971E-08  293.0  end
 am-243   19  0.0  4.31533E-08  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id02090_b50.mip

File ed24_f01_id02612_b30.mip

```
 lfd.Nr.:   1 aus sha_alf.mod


 mo-95     1  0.0  4.67069E-06  293.0  end
 tc-99     1  0.0  1.09863E-05  293.0  end
 ru-101    1  0.0  9.76043E-06  293.0  end
 rh-103    1  0.0  4.33782E-06  293.0  end
 ag-109    1  0.0  2.96840E-07  293.0  end
 cs-133    1  0.0  1.14667E-05  293.0  end
 nd-143    1  0.0  9.00927E-06  293.0  end
 nd-145    1  0.0  6.97408E-06  293.0  end
 sm-147    1  0.0  2.19762E-07  293.0  end
 sm-149    1  0.0  9.14633E-08  293.0  end
 sm-150    1  0.0  2.03663E-06  293.0  end
 sm-151    1  0.0  3.17012E-07  293.0  end
 sm-152    1  0.0  1.00990E-06  293.0  end
 eu-153    1  0.0  4.53614E-07  293.0  end
 gd-155    1  0.0  2.04788E-10  293.0  end
 u-234     1  0.0  7.22023E-06  293.0  end
 u-235     1  0.0  7.38873E-04  293.0  end
 u-236     1  0.0  3.73654E-05  293.0  end
 u-238     1  0.0  2.19107E-02  293.0  end
 np-237    1  0.0  1.05409E-06  293.0  end
 pu-238    1  0.0  6.33352E-08  293.0  end
 pu-239    1  0.0  6.66489E-05  293.0  end
 pu-240    1  0.0  6.76284E-06  293.0  end
 pu-241    1  0.0  2.13231E-06  293.0  end
 pu-242    1  0.0  1.00259E-07  293.0  end
 am-241    1  0.0  1.44253E-08  293.0  end
 am-243    1  0.0  3.04791E-09  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  2.12313E-05  293.0  end
 tc-99     2  0.0  2.79087E-05  293.0  end
 ru-101    2  0.0  2.55954E-05  293.0  end
 rh-103    2  0.0  1.36186E-05  293.0  end
 ag-109    2  0.0  1.43798E-06  293.0  end
 cs-133    2  0.0  2.91472E-05  293.0  end
 nd-143    2  0.0  2.22842E-05  293.0  end
 nd-145    2  0.0  1.70912E-05  293.0  end
 sm-147    2  0.0  1.21594E-06  293.0  end
 sm-149    2  0.0  1.04634E-07  293.0  end
 sm-150    2  0.0  6.07782E-06  293.0  end
 sm-151    2  0.0  4.44308E-07  293.0  end
 sm-152    2  0.0  2.80210E-06  293.0  end
 eu-153    2  0.0  1.89643E-06  293.0  end
 gd-155    2  0.0  5.57124E-10  293.0  end
 u-234     2  0.0  6.03439E-06  293.0  end
 u-235     2  0.0  4.99519E-04  293.0  end
 u-236     2  0.0  7.82335E-05  293.0  end
 u-238     2  0.0  2.17298E-02  293.0  end
 np-237    2  0.0  4.56568E-06  293.0  end
 pu-238    2  0.0  7.41492E-07  293.0  end
 pu-239    2  0.0  1.16328E-04  293.0  end
 pu-240    2  0.0  2.54122E-05  293.0  end
 pu-241    2  0.0  1.42574E-05  293.0  end
 pu-242    2  0.0  2.09726E-06  293.0  end
 am-241    2  0.0  2.49228E-07  293.0  end
 am-243    2  0.0  1.91755E-07  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
 mo-95     3  0.0  2.90427E-05  293.0  end
 tc-99     3  0.0  3.54266E-05  293.0  end
 ru-101    3  0.0  3.30957E-05  293.0  end
```

File ed24_f01_id02612_b50.mip

```
 lfd.Nr.:   2 aus sha_alf.mod


 mo-95     1  0.0  1.26482E-05  293.0  end
 tc-99     1  0.0  1.95368E-05  293.0  end
 ru-101    1  0.0  1.75918E-05  293.0  end
 rh-103    1  0.0  9.00247E-06  293.0  end
 ag-109    1  0.0  7.84850E-07  293.0  end
 cs-133    1  0.0  2.04575E-05  293.0  end
 nd-143    1  0.0  1.60256E-05  293.0  end
 nd-145    1  0.0  1.21365E-05  293.0  end
 sm-147    1  0.0  6.53922E-07  293.0  end
 sm-149    1  0.0  1.00426E-07  293.0  end
 sm-150    1  0.0  3.97195E-06  293.0  end
 sm-151    1  0.0  3.89219E-07  293.0  end
 sm-152    1  0.0  1.93048E-06  293.0  end
 eu-153    1  0.0  1.07424E-06  293.0  end
 gd-155    1  0.0  3.43221E-10  293.0  end
 u-234     1  0.0  6.62234E-06  293.0  end
 u-235     1  0.0  6.11882E-04  293.0  end
 u-236     1  0.0  5.95161E-05  293.0  end
 u-238     1  0.0  2.18235E-02  293.0  end
 np-237    1  0.0  2.56224E-06  293.0  end
 pu-238    1  0.0  2.82537E-07  293.0  end
 pu-239    1  0.0  9.73220E-05  293.0  end
 pu-240    1  0.0  1.57889E-05  293.0  end
 pu-241    1  0.0  7.44622E-06  293.0  end
 pu-242    1  0.0  6.91114E-07  293.0  end
 am-241    1  0.0  9.13615E-08  293.0  end
 am-243    1  0.0  4.11972E-08  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  3.98296E-05  293.0  end
 tc-99     2  0.0  4.57776E-05  293.0  end
 ru-101    2  0.0  4.39881E-05  293.0  end
 rh-103    2  0.0  2.30492E-05  293.0  end
 ag-109    2  0.0  3.32577E-06  293.0  end
 cs-133    2  0.0  4.71892E-05  293.0  end
 nd-143    2  0.0  3.33345E-05  293.0  end
 nd-145    2  0.0  2.73747E-05  293.0  end
 sm-147    2  0.0  2.57287E-06  293.0  end
 sm-149    2  0.0  1.02568E-07  293.0  end
 sm-150    2  0.0  1.10964E-05  293.0  end
 sm-151    2  0.0  5.45081E-07  293.0  end
 sm-152    2  0.0  4.54846E-06  293.0  end
 eu-153    2  0.0  4.22833E-06  293.0  end
 gd-155    2  0.0  1.37673E-09  293.0  end
 u-234     2  0.0  4.77306E-06  293.0  end
 u-235     2  0.0  2.95379E-04  293.0  end
 u-236     2  0.0  1.08742E-04  293.0  end
 u-238     2  0.0  2.14917E-02  293.0  end
 np-237    2  0.0  9.99246E-06  293.0  end
 pu-238    2  0.0  2.99116E-06  293.0  end
 pu-239    2  0.0  1.33676E-04  293.0  end
 pu-240    2  0.0  4.52922E-05  293.0  end
 pu-241    2  0.0  2.87132E-05  293.0  end
 pu-242    2  0.0  8.70806E-06  293.0  end
 am-241    2  0.0  7.61991E-07  293.0  end
 am-243    2  0.0  1.41614E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
 mo-95     3  0.0  5.06994E-05  293.0  end
 tc-99     3  0.0  5.61459E-05  293.0  end
 ru-101    3  0.0  5.57179E-05  293.0  end
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rh-103    3  0.0  1.76880E-05  293.0  end
ag-109    3  0.0  2.15539E-06  293.0  end
cs-133    3  0.0  3.68325E-05  293.0  end
nd-143    3  0.0  2.73465E-05  293.0  end
nd-145    3  0.0  2.14648E-05  293.0  end
sm-147    3  0.0  1.78074E-06  293.0  end
sm-149    3  0.0  1.05311E-07  293.0  end
sm-150    3  0.0  8.11454E-06  293.0  end
sm-151    3  0.0  4.89233E-07  293.0  end
sm-152    3  0.0  3.55372E-06  293.0  end
eu-153    3  0.0  2.79184E-06  293.0  end
gd-155    3  0.0  8.37506E-10  293.0  end
u-234     3  0.0  5.50475E-06  293.0  end
u-235     3  0.0  4.07826E-04  293.0  end
u-236     3  0.0  9.26287E-05  293.0  end
u-238     3  0.0  2.16368E-02  293.0  end
np-237    3  0.0  6.71084E-06  293.0  end
pu-238    3  0.0  1.44346E-06  293.0  end
pu-239    3  0.0  1.26732E-04  293.0  end
pu-240    3  0.0  3.40627E-05  293.0  end
pu-241    3  0.0  2.06501E-05  293.0  end
pu-242    3  0.0  4.23479E-06  293.0  end
am-241    3  0.0  4.48617E-07  293.0  end
am-243    3  0.0  5.14189E-07  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  3.66247E-05  293.0  end
tc-99     4  0.0  4.27056E-05  293.0  end
ru-101    4  0.0  4.06791E-05  293.0  end
rh-103    4  0.0  2.14951E-05  293.0  end
ag-109    4  0.0  2.95753E-06  293.0  end
cs-133    4  0.0  4.41455E-05  293.0  end
nd-143    4  0.0  3.16872E-05  293.0  end
nd-145    4  0.0  2.56340E-05  293.0  end
sm-147    4  0.0  2.34093E-06  293.0  end
sm-149    4  0.0  1.03755E-07  293.0  end
sm-150    4  0.0  1.01928E-05  293.0  end
sm-151    4  0.0  5.29238E-07  293.0  end
sm-152    4  0.0  4.25742E-06  293.0  end
eu-153    4  0.0  3.78002E-06  293.0  end
gd-155    4  0.0  1.19767E-09  293.0  end
u-234     4  0.0  4.99050E-06  293.0  end
u-235     4  0.0  3.27069E-04  293.0  end
u-236     4  0.0  1.04426E-04  293.0  end
u-238     4  0.0  2.15373E-02  293.0  end
np-237    4  0.0  8.98879E-06  293.0  end
pu-238    4  0.0  2.45348E-06  293.0  end
pu-239    4  0.0  1.32347E-04  293.0  end
pu-240    4  0.0  4.20805E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end
pu-239    5  0.0  1.33299E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end
rh-103    3  0.0  2.79821E-05  293.0  end
ag-109    3  0.0  4.69054E-06  293.0  end
cs-133    3  0.0  5.72281E-05  293.0  end
nd-143    3  0.0  3.79639E-05  293.0  end
nd-145    3  0.0  3.31608E-05  293.0  end
sm-147    3  0.0  3.29644E-06  293.0  end
sm-149    3  0.0  9.68565E-08  293.0  end
sm-150    3  0.0  1.42273E-05  293.0  end
sm-151    3  0.0  5.94146E-07  293.0  end
sm-152    3  0.0  5.50897E-06  293.0  end
eu-153    3  0.0  5.85408E-06  293.0  end
gd-155    3  0.0  2.10197E-09  293.0  end
u-234     3  0.0  4.03888E-06  293.0  end
u-235     3  0.0  1.99381E-04  293.0  end
u-236     3  0.0  1.20224E-04  293.0  end
u-238     3  0.0  2.13218E-02  293.0  end
np-237    3  0.0  1.34780E-05  293.0  end
pu-238    3  0.0  5.34761E-06  293.0  end
pu-239    3  0.0  1.34721E-04  293.0  end
pu-240    3  0.0  5.50798E-05  293.0  end
pu-241    3  0.0  3.50511E-05  293.0  end
pu-242    3  0.0  1.51762E-05  293.0  end
am-241    3  0.0  1.04439E-06  293.0  end
am-243    3  0.0  2.99423E-06  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  5.96712E-05  293.0  end
tc-99     4  0.0  6.46007E-05  293.0  end
ru-101    4  0.0  6.60785E-05  293.0  end
rh-103    4  0.0  3.15433E-05  293.0  end
ag-109    4  0.0  5.93158E-06  293.0  end
cs-133    4  0.0  6.50896E-05  293.0  end
nd-143    4  0.0  4.05165E-05  293.0  end
nd-145    4  0.0  3.77725E-05  293.0  end
sm-147    4  0.0  3.77541E-06  293.0  end
sm-149    4  0.0  9.15997E-08  293.0  end
sm-150    4  0.0  1.68313E-05  293.0  end
sm-151    4  0.0  6.31352E-07  293.0  end
sm-152    4  0.0  6.26848E-06  293.0  end
eu-153    4  0.0  7.27784E-06  293.0  end
gd-155    4  0.0  2.85189E-09  293.0  end
u-234     4  0.0  3.44279E-06  293.0  end
u-235     4  0.0  1.34474E-04  293.0  end
u-236     4  0.0  1.25700E-04  293.0  end
u-238     4  0.0  2.11573E-02  293.0  end
np-237    4  0.0  1.62253E-05  293.0  end
pu-238    4  0.0  7.90604E-06  293.0  end
pu-239    4  0.0  1.32944E-04  293.0  end
pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  8.76042E-06  293.0  end
pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  3.94419E-05  293.0  end
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pu-242    5  0.0  8.19047E-06  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  3.99245E-05  293.0  end
tc-99     6  0.0  4.58684E-05  293.0  end
ru-101    6  0.0  4.40871E-05  293.0  end
rh-103    6  0.0  2.30946E-05  293.0  end
ag-109    6  0.0  3.33693E-06  293.0  end
cs-133    6  0.0  4.72788E-05  293.0  end
nd-143    6  0.0  3.33814E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end
sm-147    7  0.0  2.60653E-06  293.0  end
sm-149    7  0.0  1.02369E-07  293.0  end
sm-150    7  0.0  1.12305E-05  293.0  end
sm-151    7  0.0  5.47362E-07  293.0  end
sm-152    7  0.0  4.59108E-06  293.0  end
eu-153    7  0.0  4.29579E-06  293.0  end
gd-155    7  0.0  1.40447E-09  293.0  end
u-234     7  0.0  4.74102E-06  293.0  end
u-235     7  0.0  2.90831E-04  293.0  end
u-236     7  0.0  1.09344E-04  293.0  end
u-238     7  0.0  2.14850E-02  293.0  end
np-237    7  0.0  1.01420E-05  293.0  end
pu-238    7  0.0  3.07627E-06  293.0  end
pu-239    7  0.0  1.33828E-04  293.0  end
pu-240    7  0.0  4.57545E-05  293.0  end
pu-241    7  0.0  2.90311E-05  293.0  end
pu-242    7  0.0  8.94661E-06  293.0  end
am-241    7  0.0  7.75585E-07  293.0  end
am-243    7  0.0  1.47055E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  3.95792E-05  293.0  end
tc-99     8  0.0  4.55378E-05  293.0  end
ru-101    8  0.0  4.37271E-05  293.0  end
rh-103    8  0.0  2.29293E-05  293.0  end
ag-109    8  0.0  3.29641E-06  293.0  end
cs-133    8  0.0  4.69526E-05  293.0  end
nd-143    8  0.0  3.32102E-05  293.0  end
nd-145    8  0.0  2.72393E-05  293.0  end
sm-147    8  0.0  2.55497E-06  293.0  end
sm-149    8  0.0  1.02671E-07  293.0  end
sm-150    8  0.0  1.10254E-05  293.0  end
sm-151    8  0.0  5.43866E-07  293.0  end
sm-152    8  0.0  4.52584E-06  293.0  end
eu-153    8  0.0  4.19271E-06  293.0  end
gd-155    8  0.0  1.36216E-09  293.0  end
u-234     8  0.0  4.79005E-06  293.0  end
u-235     8  0.0  2.97803E-04  293.0  end
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pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  5.58383E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  6.36571E-05  293.0  end
tc-99     6  0.0  6.83111E-05  293.0  end
ru-101    6  0.0  7.09080E-05  293.0  end
rh-103    6  0.0  3.29433E-05  293.0  end
ag-109    6  0.0  6.50953E-06  293.0  end
cs-133    6  0.0  6.84264E-05  293.0  end
nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  4.00320E-05  293.0  end
sm-147    7  0.0  3.96292E-06  293.0  end
sm-149    7  0.0  8.86158E-08  293.0  end
sm-150    7  0.0  1.81246E-05  293.0  end
sm-151    7  0.0  6.48610E-07  293.0  end
sm-152    7  0.0  6.64004E-06  293.0  end
eu-153    7  0.0  8.00504E-06  293.0  end
gd-155    7  0.0  3.27190E-09  293.0  end
u-234     7  0.0  3.14936E-06  293.0  end
u-235     7  0.0  1.07033E-04  293.0  end
u-236     7  0.0  1.27003E-04  293.0  end
u-238     7  0.0  2.10638E-02  293.0  end
np-237    7  0.0  1.75686E-05  293.0  end
pu-238    7  0.0  9.36658E-06  293.0  end
pu-239    7  0.0  1.31543E-04  293.0  end
pu-240    7  0.0  6.41029E-05  293.0  end
pu-241    7  0.0  3.98988E-05  293.0  end
pu-242    7  0.0  2.59358E-05  293.0  end
am-241    7  0.0  1.24514E-06  293.0  end
am-243    7  0.0  6.08700E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  6.35416E-05  293.0  end
tc-99     8  0.0  6.82041E-05  293.0  end
ru-101    8  0.0  7.07660E-05  293.0  end
rh-103    8  0.0  3.29044E-05  293.0  end
ag-109    8  0.0  6.49260E-06  293.0  end
cs-133    8  0.0  6.83313E-05  293.0  end
nd-143    8  0.0  4.12258E-05  293.0  end
nd-145    8  0.0  3.97090E-05  293.0  end
sm-147    8  0.0  3.93831E-06  293.0  end
sm-149    8  0.0  8.90389E-08  293.0  end
sm-150    8  0.0  1.79393E-05  293.0  end
sm-151    8  0.0  6.46165E-07  293.0  end
sm-152    8  0.0  6.58693E-06  293.0  end
eu-153    8  0.0  7.90004E-06  293.0  end
gd-155    8  0.0  3.20910E-09  293.0  end
u-234     8  0.0  3.19131E-06  293.0  end
u-235     8  0.0  1.10770E-04  293.0  end
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u-236     8  0.0  1.08419E-04  293.0  end
u-238     8  0.0  2.14952E-02  293.0  end
np-237    8  0.0  9.91337E-06  293.0  end
pu-238    8  0.0  2.94667E-06  293.0  end
pu-239    8  0.0  1.33592E-04  293.0  end
pu-240    8  0.0  4.50459E-05  293.0  end
pu-241    8  0.0  2.85432E-05  293.0  end
pu-242    8  0.0  8.58315E-06  293.0  end
am-241    8  0.0  7.54760E-07  293.0  end
am-243    8  0.0  1.38782E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  3.85161E-05  293.0  end
tc-99     9  0.0  4.45193E-05  293.0  end
ru-101    9  0.0  4.26241E-05  293.0  end
rh-103    9  0.0  2.24167E-05  293.0  end
ag-109    9  0.0  3.17286E-06  293.0  end
cs-133    9  0.0  4.59459E-05  293.0  end
nd-143    9  0.0  3.26739E-05  293.0  end
nd-145    9  0.0  2.66628E-05  293.0  end
sm-147    9  0.0  2.47847E-06  293.0  end
sm-149    9  0.0  1.03087E-07  293.0  end
sm-150    9  0.0  1.07246E-05  293.0  end
sm-151    9  0.0  5.38669E-07  293.0  end
sm-152    9  0.0  4.42961E-06  293.0  end
eu-153    9  0.0  4.04254E-06  293.0  end
gd-155    9  0.0  1.30144E-09  293.0  end
u-234     9  0.0  4.86219E-06  293.0  end
u-235     9  0.0  3.08189E-04  293.0  end
u-236     9  0.0  1.07020E-04  293.0  end
u-238     9  0.0  2.15106E-02  293.0  end
np-237    9  0.0  9.57877E-06  293.0  end
pu-238    9  0.0  2.76242E-06  293.0  end
pu-239    9  0.0  1.33196E-04  293.0  end
pu-240    9  0.0  4.39911E-05  293.0  end
pu-241    9  0.0  2.78109E-05  293.0  end
pu-242    9  0.0  8.06416E-06  293.0  end
am-241    9  0.0  7.23880E-07  293.0  end
am-243    9  0.0  1.27181E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  3.77225E-05  293.0  end
tc-99    10  0.0  4.37585E-05  293.0  end
ru-101   10  0.0  4.18054E-05  293.0  end
rh-103   10  0.0  2.20313E-05  293.0  end
ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
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u-236     8  0.0  1.26880E-04  293.0  end
u-238     8  0.0  2.10779E-02  293.0  end
np-237    8  0.0  1.73813E-05  293.0  end
pu-238    8  0.0  9.14952E-06  293.0  end
pu-239    8  0.0  1.31758E-04  293.0  end
pu-240    8  0.0  6.37523E-05  293.0  end
pu-241    8  0.0  3.97436E-05  293.0  end
pu-242    8  0.0  2.53525E-05  293.0  end
am-241    8  0.0  1.24005E-06  293.0  end
am-243    8  0.0  5.90529E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  6.25017E-05  293.0  end
tc-99     9  0.0  6.72392E-05  293.0  end
ru-101    9  0.0  6.94929E-05  293.0  end
rh-103    9  0.0  3.25501E-05  293.0  end
ag-109    9  0.0  6.34060E-06  293.0  end
cs-133    9  0.0  6.74704E-05  293.0  end
nd-143    9  0.0  4.10587E-05  293.0  end
nd-145    9  0.0  3.91922E-05  293.0  end
sm-147    9  0.0  3.89739E-06  293.0  end
sm-149    9  0.0  8.97077E-08  293.0  end
sm-150    9  0.0  1.76431E-05  293.0  end
sm-151    9  0.0  6.42227E-07  293.0  end
sm-152    9  0.0  6.50205E-06  293.0  end
eu-153    9  0.0  7.73280E-06  293.0  end
gd-155    9  0.0  3.11030E-09  293.0  end
u-234     9  0.0  3.25841E-06  293.0  end
u-235     9  0.0  1.16875E-04  293.0  end
u-236     9  0.0  1.26635E-04  293.0  end
u-238     9  0.0  2.10999E-02  293.0  end
np-237    9  0.0  1.70808E-05  293.0  end
pu-238    9  0.0  8.80797E-06  293.0  end
pu-239    9  0.0  1.32088E-04  293.0  end
pu-240    9  0.0  6.31770E-05  293.0  end
pu-241    9  0.0  3.94804E-05  293.0  end
pu-242    9  0.0  2.44361E-05  293.0  end
am-241    9  0.0  1.23098E-06  293.0  end
am-243    9  0.0  5.62282E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  6.17218E-05  293.0  end
tc-99    10  0.0  6.65140E-05  293.0  end
ru-101   10  0.0  6.85447E-05  293.0  end
rh-103   10  0.0  3.22787E-05  293.0  end
ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
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sm-150    11  0.0  1.03265E-05  293.0  end
sm-151    11  0.0  5.31640E-07  293.0  end
sm-152    11  0.0  4.30100E-06  293.0  end
eu-153    11  0.0  3.84571E-06  293.0  end
gd-155    11  0.0  1.22334E-09  293.0  end
u-234     11  0.0  4.95812E-06  293.0  end
u-235     11  0.0  3.22255E-04  293.0  end
u-236     11  0.0  1.05095E-04  293.0  end
u-238     11  0.0  2.15307E-02  293.0  end
np-237    11  0.0  9.13701E-06  293.0  end
pu-238    11  0.0  2.52920E-06  293.0  end
pu-239    11  0.0  1.32580E-04  293.0  end
pu-240    11  0.0  4.25667E-05  293.0  end
pu-241    11  0.0  2.68115E-05  293.0  end
pu-242    11  0.0  7.40231E-06  293.0  end
am-241    11  0.0  6.82477E-07  293.0  end
am-243    11  0.0  1.12799E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  3.63734E-05  293.0  end
tc-99     12  0.0  4.24647E-05  293.0  end
ru-101    12  0.0  4.04227E-05  293.0  end
rh-103    12  0.0  2.13720E-05  293.0  end
ag-109    12  0.0  2.92939E-06  293.0  end
cs-133    12  0.0  4.39058E-05  293.0  end
nd-143    12  0.0  3.15532E-05  293.0  end
nd-145    12  0.0  2.54971E-05  293.0  end
sm-147    12  0.0  2.32256E-06  293.0  end
sm-149    12  0.0  1.03836E-07  293.0  end
sm-150    12  0.0  1.01227E-05  293.0  end
sm-151    12  0.0  5.27971E-07  293.0  end
sm-152    12  0.0  4.23447E-06  293.0  end
eu-153    12  0.0  3.74564E-06  293.0  end
gd-155    12  0.0  1.18433E-09  293.0  end
u-234     12  0.0  5.00751E-06  293.0  end
u-235     12  0.0  3.29615E-04  293.0  end
u-236     12  0.0  1.04069E-04  293.0  end
u-238     12  0.0  2.15407E-02  293.0  end
np-237    12  0.0  8.91104E-06  293.0  end
pu-238    12  0.0  2.41426E-06  293.0  end
pu-239    12  0.0  1.32218E-04  293.0  end
pu-240    12  0.0  4.18236E-05  293.0  end
pu-241    12  0.0  2.62856E-05  293.0  end
pu-242    12  0.0  7.07391E-06  293.0  end
am-241    12  0.0  6.61056E-07  293.0  end
am-243    12  0.0  1.05840E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  3.56166E-05  293.0  end
tc-99     13  0.0  4.17389E-05  293.0  end
ru-101    13  0.0  3.96526E-05  293.0  end
rh-103    13  0.0  2.09998E-05  293.0  end
ag-109    13  0.0  2.84526E-06  293.0  end
cs-133    13  0.0  4.31827E-05  293.0  end
nd-143    13  0.0  3.11452E-05  293.0  end
nd-145    13  0.0  2.50844E-05  293.0  end
sm-147    13  0.0  2.26709E-06  293.0  end
sm-149    13  0.0  1.04070E-07  293.0  end
sm-150    13  0.0  9.91201E-06  293.0  end
sm-151    13  0.0  5.24130E-07  293.0  end
sm-152    13  0.0  4.16521E-06  293.0  end
eu-153    13  0.0  3.64271E-06  293.0  end
gd-155    13  0.0  1.14474E-09  293.0  end
u-234     13  0.0  5.05879E-06  293.0  end
u-235     13  0.0  3.37337E-04  293.0  end
u-236     13  0.0  1.02977E-04  293.0  end
u-238     13  0.0  2.15511E-02  293.0  end
np-237    13  0.0  8.67768E-06  293.0  end
pu-238    13  0.0  2.29860E-06  293.0  end
pu-239    13  0.0  1.31808E-04  293.0  end
pu-240    13  0.0  4.10458E-05  293.0  end
pu-241    13  0.0  2.57321E-05  293.0  end
pu-242    13  0.0  6.74198E-06  293.0  end
am-241    13  0.0  6.38790E-07  293.0  end
am-243    13  0.0  9.89299E-07  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  3.44576E-05  293.0  end
tc-99     14  0.0  4.06272E-05  293.0  end
ru-101    14  0.0  3.84781E-05  293.0  end
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sm-150    11  0.0  1.72731E-05  293.0  end
sm-151    11  0.0  6.37318E-07  293.0  end
sm-152    11  0.0  6.39579E-06  293.0  end
eu-153    11  0.0  7.52494E-06  293.0  end
gd-155    11  0.0  2.99063E-09  293.0  end
u-234     11  0.0  3.34231E-06  293.0  end
u-235     11  0.0  1.24735E-04  293.0  end
u-236     11  0.0  1.26254E-04  293.0  end
u-238     11  0.0  2.11266E-02  293.0  end
np-237    11  0.0  1.66955E-05  293.0  end
pu-238    11  0.0  8.39082E-06  293.0  end
pu-239    11  0.0  1.32485E-04  293.0  end
pu-240    11  0.0  6.24273E-05  293.0  end
pu-241    11  0.0  3.91285E-05  293.0  end
pu-242    11  0.0  2.33174E-05  293.0  end
am-241    11  0.0  1.21804E-06  293.0  end
am-243    11  0.0  5.28382E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  6.05774E-05  293.0  end
tc-99     12  0.0  6.54472E-05  293.0  end
ru-101    12  0.0  6.71636E-05  293.0  end
rh-103    12  0.0  3.18720E-05  293.0  end
ag-109    12  0.0  6.06172E-06  293.0  end
cs-133    12  0.0  6.58576E-05  293.0  end
nd-143    12  0.0  4.07041E-05  293.0  end
nd-145    12  0.0  3.82289E-05  293.0  end
sm-147    12  0.0  3.81610E-06  293.0  end
sm-149    12  0.0  9.10122E-08  293.0  end
sm-150    12  0.0  1.70919E-05  293.0  end
sm-151    12  0.0  6.34925E-07  293.0  end
sm-152    12  0.0  6.34352E-06  293.0  end
eu-153    12  0.0  7.42345E-06  293.0  end
gd-155    12  0.0  2.93373E-09  293.0  end
u-234     12  0.0  3.38349E-06  293.0  end
u-235     12  0.0  1.28685E-04  293.0  end
u-236     12  0.0  1.26040E-04  293.0  end
u-238     12  0.0  2.11393E-02  293.0  end
np-237    12  0.0  1.65004E-05  293.0  end
pu-238    12  0.0  8.19019E-06  293.0  end
pu-239    12  0.0  1.32679E-04  293.0  end
pu-240    12  0.0  6.20454E-05  293.0  end
pu-241    12  0.0  3.89470E-05  293.0  end
pu-242    12  0.0  2.27791E-05  293.0  end
am-241    12  0.0  1.21104E-06  293.0  end
am-243    12  0.0  5.12320E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  5.97211E-05  293.0  end
tc-99     13  0.0  6.46473E-05  293.0  end
ru-101    13  0.0  6.61380E-05  293.0  end
rh-103    13  0.0  3.15615E-05  293.0  end
ag-109    13  0.0  5.93872E-06  293.0  end
cs-133    13  0.0  6.51320E-05  293.0  end
nd-143    13  0.0  4.05272E-05  293.0  end
nd-145    13  0.0  3.77977E-05  293.0  end
sm-147    13  0.0  3.77769E-06  293.0  end
sm-149    13  0.0  9.15705E-08  293.0  end
sm-150    13  0.0  1.68457E-05  293.0  end
sm-151    13  0.0  6.31557E-07  293.0  end
sm-152    13  0.0  6.27260E-06  293.0  end
eu-153    13  0.0  7.28585E-06  293.0  end
gd-155    13  0.0  2.85644E-09  293.0  end
u-234     13  0.0  3.43952E-06  293.0  end
u-235     13  0.0  1.34152E-04  293.0  end
u-236     13  0.0  1.25719E-04  293.0  end
u-238     13  0.0  2.11563E-02  293.0  end
np-237    13  0.0  1.62400E-05  293.0  end
pu-238    13  0.0  7.92157E-06  293.0  end
pu-239    13  0.0  1.32930E-04  293.0  end
pu-240    13  0.0  6.15186E-05  293.0  end
pu-241    13  0.0  3.86844E-05  293.0  end
pu-242    13  0.0  2.20594E-05  293.0  end
am-241    13  0.0  1.20082E-06  293.0  end
am-243    13  0.0  4.90995E-06  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  5.83173E-05  293.0  end
tc-99     14  0.0  6.33341E-05  293.0  end
ru-101    14  0.0  6.44712E-05  293.0  end
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rh-103	14	0.0	2.04246E-05	293.0	end
ag-109	14	0.0	2.71820E-06	293.0	end
cs-133	14	0.0	4.20714E-05	293.0	end
nd-143	14	0.0	3.05087E-05	293.0	end
nd-145	14	0.0	2.44504E-05	293.0	end
sm-147	14	0.0	2.18173E-06	293.0	end
sm-149	14	0.0	1.04399E-07	293.0	end
sm-150	14	0.0	9.59030E-06	293.0	end
sm-151	14	0.0	5.18167E-07	293.0	end
sm-152	14	0.0	4.05863E-06	293.0	end
eu-153	14	0.0	3.48682E-06	293.0	end
gd-155	14	0.0	1.08567E-09	293.0	end
u-234	14	0.0	5.13750E-06	293.0	end
u-235	14	0.0	3.49325E-04	293.0	end
u-236	14	0.0	1.01275E-04	293.0	end
u-238	14	0.0	2.15669E-02	293.0	end
np-237	14	0.0	8.32254E-06	293.0	end
pu-238	14	0.0	2.12847E-06	293.0	end
pu-239	14	0.0	1.31120E-04	293.0	end
pu-240	14	0.0	3.98435E-05	293.0	end
pu-241	14	0.0	2.48695E-05	293.0	end
pu-242	14	0.0	6.25093E-06	293.0	end
am-241	14	0.0	6.04673E-07	293.0	end
am-243	14	0.0	8.89528E-07	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	3.26208E-05	293.0	end
tc-99	15	0.0	3.88633E-05	293.0	end
ru-101	15	0.0	3.66334E-05	293.0	end
rh-103	15	0.0	1.95056E-05	293.0	end
ag-109	15	0.0	2.52149E-06	293.0	end
cs-133	15	0.0	4.03024E-05	293.0	end
nd-143	15	0.0	2.94693E-05	293.0	end
nd-145	15	0.0	2.34409E-05	293.0	end
sm-147	15	0.0	2.04581E-06	293.0	end
sm-149	15	0.0	1.04818E-07	293.0	end
sm-150	15	0.0	9.08430E-06	293.0	end
sm-151	15	0.0	5.08550E-07	293.0	end
sm-152	15	0.0	3.88868E-06	293.0	end
eu-153	15	0.0	3.24470E-06	293.0	end
gd-155	15	0.0	9.96413E-10	293.0	end
u-234	15	0.0	5.26210E-06	293.0	end
u-235	15	0.0	3.68717E-04	293.0	end
u-236	15	0.0	9.84635E-05	293.0	end
u-238	15	0.0	2.15906E-02	293.0	end
np-237	15	0.0	7.76651E-06	293.0	end
pu-238	15	0.0	1.87619E-06	293.0	end
pu-239	15	0.0	1.29853E-04	293.0	end
pu-240	15	0.0	3.79097E-05	293.0	end
pu-241	15	0.0	2.34701E-05	293.0	end
pu-242	15	0.0	5.51600E-06	293.0	end
am-241	15	0.0	5.50895E-07	293.0	end
am-243	15	0.0	7.45982E-07	293.0	end
o	15	0.0	4.58960E-02	293.0	end
mo-95	16	0.0	2.99195E-05	293.0	end
tc-99	16	0.0	3.62688E-05	293.0	end
ru-101	16	0.0	3.39560E-05	293.0	end
rh-103	16	0.0	1.81361E-05	293.0	end
ag-109	16	0.0	2.24298E-06	293.0	end
cs-133	16	0.0	3.76852E-05	293.0	end
nd-143	16	0.0	2.78782E-05	293.0	end
nd-145	16	0.0	2.19504E-05	293.0	end
sm-147	16	0.0	1.84561E-06	293.0	end
sm-149	16	0.0	1.05235E-07	293.0	end
sm-150	16	0.0	8.35010E-06	293.0	end
sm-151	16	0.0	4.94038E-07	293.0	end
sm-152	16	0.0	3.63625E-06	293.0	end
eu-153	16	0.0	2.90044E-06	293.0	end
gd-155	16	0.0	8.74616E-10	293.0	end
u-234	16	0.0	5.44532E-06	293.0	end
u-235	16	0.0	3.98079E-04	293.0	end
u-236	16	0.0	9.41026E-05	293.0	end
u-238	16	0.0	2.16255E-02	293.0	end
np-237	16	0.0	6.96587E-06	293.0	end
pu-238	16	0.0	1.54255E-06	293.0	end
pu-239	16	0.0	1.27582E-04	293.0	end
pu-240	16	0.0	3.50137E-05	293.0	end
pu-241	16	0.0	2.13511E-05	293.0	end

rh-103	14	0.0	3.10423E-05	293.0	end
ag-109	14	0.0	5.73898E-06	293.0	end
cs-133	14	0.0	6.39341E-05	293.0	end
nd-143	14	0.0	4.02110E-05	293.0	end
nd-145	14	0.0	3.70878E-05	293.0	end
sm-147	14	0.0	3.71195E-06	293.0	end
sm-149	14	0.0	9.22134E-08	293.0	end
sm-150	14	0.0	1.64405E-05	293.0	end
sm-151	14	0.0	6.25396E-07	293.0	end
sm-152	14	0.0	6.15690E-06	293.0	end
eu-153	14	0.0	7.06000E-06	293.0	end
gd-155	14	0.0	2.72474E-09	293.0	end
u-234	14	0.0	3.53182E-06	293.0	end
u-235	14	0.0	1.43388E-04	293.0	end
u-236	14	0.0	1.25122E-04	293.0	end
u-238	14	0.0	2.11834E-02	293.0	end
np-237	14	0.0	1.58527E-05	293.0	end
pu-238	14	0.0	7.48969E-06	293.0	end
pu-239	14	0.0	1.33284E-04	293.0	end
pu-240	14	0.0	6.06508E-05	293.0	end
pu-241	14	0.0	3.81956E-05	293.0	end
pu-242	14	0.0	2.09077E-05	293.0	end
am-241	14	0.0	1.18227E-06	293.0	end
am-243	14	0.0	4.56963E-06	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	5.59766E-05	293.0	end
tc-99	15	0.0	6.11354E-05	293.0	end
ru-101	15	0.0	6.17305E-05	293.0	end
rh-103	15	0.0	3.01438E-05	293.0	end
ag-109	15	0.0	5.41006E-06	293.0	end
cs-133	15	0.0	6.19087E-05	293.0	end
nd-143	15	0.0	3.96147E-05	293.0	end
nd-145	15	0.0	3.58942E-05	293.0	end
sm-147	15	0.0	3.59443E-06	293.0	end
sm-149	15	0.0	9.35183E-08	293.0	end
sm-150	15	0.0	1.57616E-05	293.0	end
sm-151	15	0.0	6.15679E-07	293.0	end
sm-152	15	0.0	5.96088E-06	293.0	end
eu-153	15	0.0	6.68553E-06	293.0	end
gd-155	15	0.0	2.51946E-09	293.0	end
u-234	15	0.0	3.68665E-06	293.0	end
u-235	15	0.0	1.59551E-04	293.0	end
u-236	15	0.0	1.23904E-04	293.0	end
u-238	15	0.0	2.12279E-02	293.0	end
np-237	15	0.0	1.51594E-05	293.0	end
pu-238	15	0.0	6.79175E-06	293.0	end
pu-239	15	0.0	1.33837E-04	293.0	end
pu-240	15	0.0	5.90808E-05	293.0	end
pu-241	15	0.0	3.73309E-05	293.0	end
pu-242	15	0.0	1.90485E-05	293.0	end
am-241	15	0.0	1.14652E-06	293.0	end
am-243	15	0.0	4.03851E-06	293.0	end
o	15	0.0	4.58960E-02	293.0	end
mo-95	16	0.0	5.23242E-05	293.0	end
tc-99	16	0.0	5.76858E-05	293.0	end
ru-101	16	0.0	5.75451E-05	293.0	end
rh-103	16	0.0	2.86662E-05	293.0	end
ag-109	16	0.0	4.90848E-06	293.0	end
cs-133	16	0.0	5.86844E-05	293.0	end
nd-143	16	0.0	3.85167E-05	293.0	end
nd-145	16	0.0	3.40075E-05	293.0	end
sm-147	16	0.0	3.39266E-06	293.0	end
sm-149	16	0.0	9.58510E-08	293.0	end
sm-150	16	0.0	1.46999E-05	293.0	end
sm-151	16	0.0	6.00904E-07	293.0	end
sm-152	16	0.0	5.64916E-06	293.0	end
eu-153	16	0.0	6.10788E-06	293.0	end
gd-155	16	0.0	2.22590E-09	293.0	end
u-234	16	0.0	3.93006E-06	293.0	end
u-235	16	0.0	1.86627E-04	293.0	end
u-236	16	0.0	1.21491E-04	293.0	end
u-238	16	0.0	2.12937E-02	293.0	end
np-237	16	0.0	1.40001E-05	293.0	end
pu-238	16	0.0	5.77184E-06	293.0	end
pu-239	16	0.0	1.34521E-04	293.0	end
pu-240	16	0.0	5.63694E-05	293.0	end
pu-241	16	0.0	3.58101E-05	293.0	end

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pu-242   16  0.0  4.53056E-06  293.0  end
am-241   16  0.0  4.73250E-07  293.0  end
am-243   16  0.0  5.65454E-07  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  2.55024E-05  293.0  end
tc-99    17  0.0  3.20226E-05  293.0  end
ru-101   17  0.0  2.96603E-05  293.0  end
rh-103   17  0.0  1.58586E-05  293.0  end
ag-109   17  0.0  1.81599E-06  293.0  end
cs-133   17  0.0  3.33671E-05  293.0  end
nd-143   17  0.0  2.51233E-05  293.0  end
nd-145   17  0.0  1.94933E-05  293.0  end
sm-147   17  0.0  1.52096E-06  293.0  end
sm-149   17  0.0  1.05319E-07  293.0  end
sm-150   17  0.0  7.17686E-06  293.0  end
sm-151   17  0.0  4.69348E-07  293.0  end
sm-152   17  0.0  3.21675E-06  293.0  end
eu-153   17  0.0  2.36941E-06  293.0  end
gd-155   17  0.0  6.99396E-10  293.0  end
u-234    17  0.0  5.74484E-06  293.0  end
u-235    17  0.0  4.48304E-04  293.0  end
u-236    17  0.0  8.63882E-05  293.0  end
u-238    17  0.0  2.16799E-02  293.0  end
np-237   17  0.0  5.70675E-06  293.0  end
pu-238   17  0.0  1.08656E-06  293.0  end
pu-239   17  0.0  1.22672E-04  293.0  end
pu-240   17  0.0  3.01727E-05  293.0  end
pu-241   17  0.0  1.77719E-05  293.0  end
pu-242   17  0.0  3.15687E-06  293.0  end
am-241   17  0.0  3.53101E-07  293.0  end
am-243   17  0.0  3.40169E-07  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  2.49846E-05  293.0  end
tc-99    18  0.0  3.15498E-05  293.0  end
ru-101   18  0.0  2.97112E-05  293.0  end
rh-103   18  0.0  1.62961E-05  293.0  end
ag-109   18  0.0  2.01934E-06  293.0  end
cs-133   18  0.0  3.27452E-05  293.0  end
nd-143   18  0.0  2.52787E-05  293.0  end
nd-145   18  0.0  1.91118E-05  293.0  end
sm-147   18  0.0  1.39790E-06  293.0  end
sm-149   18  0.0  1.51262E-07  293.0  end
sm-150   18  0.0  7.32690E-06  293.0  end
sm-151   18  0.0  6.27006E-07  293.0  end
sm-152   18  0.0  3.07161E-06  293.0  end
eu-153   18  0.0  2.53023E-06  293.0  end
gd-155   18  0.0  1.15135E-09  293.0  end
u-234    18  0.0  5.45399E-06  293.0  end
u-235    18  0.0  4.75122E-04  293.0  end
u-236    18  0.0  8.71458E-05  293.0  end
u-238    18  0.0  2.15984E-02  293.0  end
np-237   18  0.0  7.21537E-06  293.0  end
pu-238   18  0.0  1.51896E-06  293.0  end
pu-239   18  0.0  1.67460E-04  293.0  end
pu-240   18  0.0  3.39682E-05  293.0  end
pu-241   18  0.0  2.28112E-05  293.0  end
pu-242   18  0.0  3.46675E-06  293.0  end
am-241   18  0.0  4.63818E-07  293.0  end
am-243   18  0.0  4.63625E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  1.73104E-05  293.0  end
tc-99    19  0.0  2.41222E-05  293.0  end
ru-101   19  0.0  2.22734E-05  293.0  end
rh-103   19  0.0  1.19898E-05  293.0  end
ag-109   19  0.0  1.29862E-06  293.0  end
cs-133   19  0.0  2.51558E-05  293.0  end
nd-143   19  0.0  1.97172E-05  293.0  end
nd-145   19  0.0  1.47806E-05  293.0  end
sm-147   19  0.0  9.06763E-07  293.0  end
sm-149   19  0.0  1.42348E-07  293.0  end
sm-150   19  0.0  5.28886E-06  293.0  end
sm-151   19  0.0  5.37314E-07  293.0  end
sm-152   19  0.0  2.34710E-06  293.0  end
eu-153   19  0.0  1.64874E-06  293.0  end
gd-155   19  0.0  7.01769E-10  293.0  end
u-234    19  0.0  6.02958E-06  293.0  end
u-235    19  0.0  5.63255E-04  293.0  end
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pu-242   16  0.0  1.63183E-05  293.0  end
am-241   16  0.0  1.07879E-06  293.0  end
am-243   16  0.0  3.29464E-06  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  4.65569E-05  293.0  end
tc-99    17  0.0  5.22062E-05  293.0  end
ru-101   17  0.0  5.11495E-05  293.0  end
rh-103   17  0.0  2.61716E-05  293.0  end
ag-109   17  0.0  4.15057E-06  293.0  end
cs-133   17  0.0  5.34588E-05  293.0  end
nd-143   17  0.0  3.63853E-05  293.0  end
nd-145   17  0.0  3.09781E-05  293.0  end
sm-147   17  0.0  3.03533E-06  293.0  end
sm-149   17  0.0  9.92769E-08  293.0  end
sm-150   17  0.0  1.30259E-05  293.0  end
sm-151   17  0.0  5.76253E-07  293.0  end
sm-152   17  0.0  5.14759E-06  293.0  end
eu-153   17  0.0  5.21793E-06  293.0  end
gd-155   17  0.0  1.80414E-09  293.0  end
u-234    17  0.0  4.31779E-06  293.0  end
u-235    17  0.0  2.33815E-04  293.0  end
u-236    17  0.0  1.16441E-04  293.0  end
u-238    17  0.0  2.13901E-02  293.0  end
np-237   17  0.0  1.21430E-05  293.0  end
pu-238   17  0.0  4.35058E-06  293.0  end
pu-239   17  0.0  1.34861E-04  293.0  end
pu-240   17  0.0  5.15750E-05  293.0  end
pu-241   17  0.0  3.28873E-05  293.0  end
pu-242   17  0.0  1.24681E-05  293.0  end
am-241   17  0.0  9.45989E-07  293.0  end
am-243   17  0.0  2.30830E-06  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  4.53387E-05  293.0  end
tc-99    18  0.0  5.10893E-05  293.0  end
ru-101   18  0.0  5.09628E-05  293.0  end
rh-103   18  0.0  2.72065E-05  293.0  end
ag-109   18  0.0  4.38946E-06  293.0  end
cs-133   18  0.0  5.20060E-05  293.0  end
nd-143   18  0.0  3.81946E-05  293.0  end
nd-145   18  0.0  3.02590E-05  293.0  end
sm-147   18  0.0  2.69260E-06  293.0  end
sm-149   18  0.0  1.61536E-07  293.0  end
sm-150   18  0.0  1.31508E-05  293.0  end
sm-151   18  0.0  8.62618E-07  293.0  end
sm-152   18  0.0  4.84635E-06  293.0  end
eu-153   18  0.0  5.37101E-06  293.0  end
gd-155   18  0.0  3.39934E-09  293.0  end
u-234    18  0.0  4.02008E-06  293.0  end
u-235    18  0.0  2.82758E-04  293.0  end
u-236    18  0.0  1.15231E-04  293.0  end
u-238    18  0.0  2.12574E-02  293.0  end
np-237   18  0.0  1.48982E-05  293.0  end
pu-238   18  0.0  5.78822E-06  293.0  end
pu-239   18  0.0  2.00871E-04  293.0  end
pu-240   18  0.0  5.82008E-05  293.0  end
pu-241   18  0.0  4.38693E-05  293.0  end
pu-242   18  0.0  1.22803E-05  293.0  end
am-241   18  0.0  1.34344E-06  293.0  end
am-243   18  0.0  2.68159E-06  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  3.42666E-05  293.0  end
tc-99    19  0.0  4.04857E-05  293.0  end
ru-101   19  0.0  3.91026E-05  293.0  end
rh-103   19  0.0  2.13892E-05  293.0  end
ag-109   19  0.0  3.02721E-06  293.0  end
cs-133   19  0.0  4.16939E-05  293.0  end
nd-143   19  0.0  3.15008E-05  293.0  end
nd-145   19  0.0  2.42500E-05  293.0  end
sm-147   19  0.0  2.00967E-06  293.0  end
sm-149   19  0.0  1.57841E-07  293.0  end
sm-150   19  0.0  9.92606E-06  293.0  end
sm-151   19  0.0  7.34702E-07  293.0  end
sm-152   19  0.0  3.90359E-06  293.0  end
eu-153   19  0.0  3.75341E-06  293.0  end
gd-155   19  0.0  1.96535E-09  293.0  end
u-234    19  0.0  4.78195E-06  293.0  end
u-235    19  0.0  3.80319E-04  293.0  end
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u-236     19  0.0  7.20874E-05  293.0  end
u-238     19  0.0  2.17085E-02  293.0  end
np-237    19  0.0  4.70199E-06  293.0  end
pu-238    19  0.0  7.31742E-07  293.0  end
pu-239    19  0.0  1.45650E-04  293.0  end
pu-240    19  0.0  2.42397E-05  293.0  end
pu-241    19  0.0  1.46019E-05  293.0  end
pu-242    19  0.0  1.61382E-06  293.0  end
am-241    19  0.0  2.28391E-07  293.0  end
am-243    19  0.0  1.58691E-07  293.0  end
o         19  0.0  4.58960E-02  293.0  end
mo-95     20  0.0  3.60489E-06  293.0  end
tc-99     20  0.0  9.62205E-06  293.0  end
ru-101    20  0.0  8.62330E-06  293.0  end
rh-103    20  0.0  3.72052E-06  293.0  end
ag-109    20  0.0  2.80964E-07  293.0  end
cs-133    20  0.0  1.00124E-05  293.0  end
nd-143    20  0.0  7.82217E-06  293.0  end
nd-145    20  0.0  6.11608E-06  293.0  end
sm-147    20  0.0  1.66025E-07  293.0  end
sm-149    20  0.0  1.12591E-07  293.0  end
sm-150    20  0.0  1.77893E-06  293.0  end
sm-151    20  0.0  3.39708E-07  293.0  end
sm-152    20  0.0  8.48281E-07  293.0  end
eu-153    20  0.0  4.06906E-07  293.0  end
gd-155    20  0.0  2.38783E-10  293.0  end
u-234     20  0.0  7.18904E-06  293.0  end
u-235     20  0.0  7.63846E-04  293.0  end
u-236     20  0.0  3.50434E-05  293.0  end
u-238     20  0.0  2.18987E-02  293.0  end
np-237    20  0.0  1.12639E-06  293.0  end
pu-238    20  0.0  6.67749E-08  293.0  end
pu-239    20  0.0  7.78525E-05  293.0  end
pu-240    20  0.0  6.56349E-06  293.0  end
pu-241    20  0.0  2.16806E-06  293.0  end
pu-242    20  0.0  8.57529E-08  293.0  end
am-241    20  0.0  1.30160E-08  293.0  end
am-243    20  0.0  2.92719E-09  293.0  end
o         20  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id02612_b30.mip

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u-236     19  0.0  1.02041E-04  293.0  end
u-238     19  0.0  2.14533E-02  293.0  end
np-237    19  0.0  1.06080E-05  293.0  end
pu-238    19  0.0  3.02951E-06  293.0  end
pu-239    19  0.0  1.86207E-04  293.0  end
pu-240    19  0.0  4.54577E-05  293.0  end
pu-241    19  0.0  3.28165E-05  293.0  end
pu-242    19  0.0  6.77733E-06  293.0  end
am-241    19  0.0  8.35494E-07  293.0  end
am-243    19  0.0  1.18983E-06  293.0  end
o         19  0.0  4.58960E-02  293.0  end
mo-95     20  0.0  1.07992E-05  293.0  end
tc-99     20  0.0  1.76762E-05  293.0  end
ru-101    20  0.0  1.60668E-05  293.0  end
rh-103    20  0.0  8.25125E-06  293.0  end
ag-109    20  0.0  7.75062E-07  293.0  end
cs-133    20  0.0  1.84718E-05  293.0  end
nd-143    20  0.0  1.46035E-05  293.0  end
nd-145    20  0.0  1.09672E-05  293.0  end
sm-147    20  0.0  5.27112E-07  293.0  end
sm-149    20  0.0  1.31370E-07  293.0  end
sm-150    20  0.0  3.63945E-06  293.0  end
sm-151    20  0.0  4.57408E-07  293.0  end
sm-152    20  0.0  1.69108E-06  293.0  end
eu-153    20  0.0  1.00906E-06  293.0  end
gd-155    20  0.0  4.44172E-10  293.0  end
u-234     20  0.0  6.53976E-06  293.0  end
u-235     20  0.0  6.47341E-04  293.0  end
u-236     20  0.0  5.69246E-05  293.0  end
u-238     20  0.0  2.17965E-02  293.0  end
np-237    20  0.0  2.86069E-06  293.0  end
pu-238    20  0.0  3.20752E-07  293.0  end
pu-239    20  0.0  1.20509E-04  293.0  end
pu-240    20  0.0  1.59776E-05  293.0  end
pu-241    20  0.0  8.15522E-06  293.0  end
pu-242    20  0.0  6.30115E-07  293.0  end
am-241    20  0.0  9.26971E-08  293.0  end
am-243    20  0.0  4.31533E-08  293.0  end
o         20  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id02612_b50.mip

File ed24_f01_id03135_b30.mip

```
lfd.Nr.:   1 aus sha_alf.mod


mo-95      1  0.0  4.67069E-06  293.0  end
tc-99      1  0.0  1.09863E-05  293.0  end
ru-101     1  0.0  9.76043E-06  293.0  end
rh-103     1  0.0  4.33782E-06  293.0  end
ag-109     1  0.0  2.96840E-07  293.0  end
cs-133     1  0.0  1.14667E-05  293.0  end
nd-143     1  0.0  9.00927E-06  293.0  end
nd-145     1  0.0  6.97408E-06  293.0  end
sm-147     1  0.0  2.19762E-07  293.0  end
sm-149     1  0.0  9.14633E-08  293.0  end
sm-150     1  0.0  2.03663E-06  293.0  end
sm-151     1  0.0  3.17012E-07  293.0  end
sm-152     1  0.0  1.00990E-06  293.0  end
eu-153     1  0.0  4.53614E-07  293.0  end
gd-155     1  0.0  2.04788E-10  293.0  end
u-234      1  0.0  7.22023E-06  293.0  end
u-235      1  0.0  7.38873E-04  293.0  end
u-236      1  0.0  3.73654E-05  293.0  end
u-238      1  0.0  2.19107E-02  293.0  end
np-237     1  0.0  1.05409E-06  293.0  end
pu-238     1  0.0  6.33352E-08  293.0  end
pu-239     1  0.0  6.66489E-05  293.0  end
pu-240     1  0.0  6.76284E-06  293.0  end
pu-241     1  0.0  2.13231E-06  293.0  end
pu-242     1  0.0  1.00259E-07  293.0  end
```

File ed24_f01_id03135_b50.mip

```
lfd.Nr.:   2 aus sha_alf.mod


mo-95      1  0.0  1.26482E-05  293.0  end
tc-99      1  0.0  1.95368E-05  293.0  end
ru-101     1  0.0  1.75918E-05  293.0  end
rh-103     1  0.0  9.00247E-06  293.0  end
ag-109     1  0.0  7.84850E-07  293.0  end
cs-133     1  0.0  2.04575E-05  293.0  end
nd-143     1  0.0  1.60256E-05  293.0  end
nd-145     1  0.0  1.21365E-05  293.0  end
sm-147     1  0.0  6.53922E-07  293.0  end
sm-149     1  0.0  1.00426E-07  293.0  end
sm-150     1  0.0  3.97195E-06  293.0  end
sm-151     1  0.0  3.89219E-07  293.0  end
sm-152     1  0.0  1.93048E-06  293.0  end
eu-153     1  0.0  1.07424E-06  293.0  end
gd-155     1  0.0  3.43221E-10  293.0  end
u-234      1  0.0  6.62234E-06  293.0  end
u-235      1  0.0  6.11882E-04  293.0  end
u-236      1  0.0  5.95161E-05  293.0  end
u-238      1  0.0  2.18235E-02  293.0  end
np-237     1  0.0  2.56224E-06  293.0  end
pu-238     1  0.0  2.82537E-07  293.0  end
pu-239     1  0.0  9.73220E-05  293.0  end
pu-240     1  0.0  1.57889E-05  293.0  end
pu-241     1  0.0  7.44622E-06  293.0  end
pu-242     1  0.0  6.91114E-07  293.0  end
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am-241     1  0.0  1.44253E-08  293.0  end
am-243     1  0.0  3.04791E-09  293.0  end
o          1  0.0  4.58960E-02  293.0  end
mo-95      2  0.0  2.12313E-05  293.0  end
tc-99      2  0.0  2.79087E-05  293.0  end
ru-101     2  0.0  2.55954E-05  293.0  end
rh-103     2  0.0  1.36186E-05  293.0  end
ag-109     2  0.0  1.43798E-06  293.0  end
cs-133     2  0.0  2.91472E-05  293.0  end
nd-143     2  0.0  2.22842E-05  293.0  end
nd-145     2  0.0  1.70912E-05  293.0  end
sm-147     2  0.0  1.21594E-06  293.0  end
sm-149     2  0.0  1.04634E-07  293.0  end
sm-150     2  0.0  6.07782E-06  293.0  end
sm-151     2  0.0  4.44308E-07  293.0  end
sm-152     2  0.0  2.80210E-06  293.0  end
eu-153     2  0.0  1.89643E-06  293.0  end
gd-155     2  0.0  5.57124E-10  293.0  end
u-234      2  0.0  6.03439E-06  293.0  end
u-235      2  0.0  4.99519E-04  293.0  end
u-236      2  0.0  7.82335E-05  293.0  end
u-238      2  0.0  2.17298E-02  293.0  end
np-237     2  0.0  4.56568E-06  293.0  end
pu-238     2  0.0  7.41492E-07  293.0  end
pu-239     2  0.0  1.16328E-04  293.0  end
pu-240     2  0.0  2.54122E-05  293.0  end
pu-241     2  0.0  1.42574E-05  293.0  end
pu-242     2  0.0  2.09726E-06  293.0  end
am-241     2  0.0  2.49228E-07  293.0  end
am-243     2  0.0  1.91755E-07  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  2.90427E-05  293.0  end
tc-99      3  0.0  3.54266E-05  293.0  end
ru-101     3  0.0  3.30957E-05  293.0  end
rh-103     3  0.0  1.76880E-05  293.0  end
ag-109     3  0.0  2.15539E-06  293.0  end
cs-133     3  0.0  3.68325E-05  293.0  end
nd-143     3  0.0  2.73465E-05  293.0  end
nd-145     3  0.0  2.14648E-05  293.0  end
sm-147     3  0.0  1.78074E-06  293.0  end
sm-149     3  0.0  1.05311E-07  293.0  end
sm-150     3  0.0  8.11454E-06  293.0  end
sm-151     3  0.0  4.89233E-07  293.0  end
sm-152     3  0.0  3.55372E-06  293.0  end
eu-153     3  0.0  2.79184E-06  293.0  end
gd-155     3  0.0  8.37506E-10  293.0  end
u-234      3  0.0  5.50475E-06  293.0  end
u-235      3  0.0  4.07826E-04  293.0  end
u-236      3  0.0  9.26287E-05  293.0  end
u-238      3  0.0  2.16368E-02  293.0  end
np-237     3  0.0  6.71084E-06  293.0  end
pu-238     3  0.0  1.44346E-06  293.0  end
pu-239     3  0.0  1.26732E-04  293.0  end
pu-240     3  0.0  3.40627E-05  293.0  end
pu-241     3  0.0  2.06501E-05  293.0  end
pu-242     3  0.0  4.23479E-06  293.0  end
am-241     3  0.0  4.48617E-07  293.0  end
am-243     3  0.0  5.14189E-07  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  3.66247E-05  293.0  end
tc-99      4  0.0  4.27056E-05  293.0  end
ru-101     4  0.0  4.06791E-05  293.0  end
rh-103     4  0.0  2.14951E-05  293.0  end
ag-109     4  0.0  2.95753E-06  293.0  end
cs-133     4  0.0  4.41455E-05  293.0  end
nd-143     4  0.0  3.16872E-05  293.0  end
nd-145     4  0.0  2.56340E-05  293.0  end
sm-147     4  0.0  2.34093E-06  293.0  end
sm-149     4  0.0  1.03755E-07  293.0  end
sm-150     4  0.0  1.01928E-05  293.0  end
sm-151     4  0.0  5.29238E-07  293.0  end
sm-152     4  0.0  4.25742E-06  293.0  end
eu-153     4  0.0  3.78002E-06  293.0  end
gd-155     4  0.0  1.19767E-09  293.0  end
u-234      4  0.0  4.99050E-06  293.0  end
u-235      4  0.0  3.27069E-04  293.0  end
u-236      4  0.0  1.04426E-04  293.0  end
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am-241     1  0.0  9.13615E-08  293.0  end
am-243     1  0.0  4.11972E-08  293.0  end
o          1  0.0  4.58960E-02  293.0  end
mo-95      2  0.0  3.98296E-05  293.0  end
tc-99      2  0.0  4.57776E-05  293.0  end
ru-101     2  0.0  4.39881E-05  293.0  end
rh-103     2  0.0  2.30492E-05  293.0  end
ag-109     2  0.0  3.32577E-06  293.0  end
cs-133     2  0.0  4.71892E-05  293.0  end
nd-143     2  0.0  3.33345E-05  293.0  end
nd-145     2  0.0  2.73747E-05  293.0  end
sm-147     2  0.0  2.57287E-06  293.0  end
sm-149     2  0.0  1.02568E-07  293.0  end
sm-150     2  0.0  1.10964E-05  293.0  end
sm-151     2  0.0  5.45081E-07  293.0  end
sm-152     2  0.0  4.54846E-06  293.0  end
eu-153     2  0.0  4.22833E-06  293.0  end
gd-155     2  0.0  1.37673E-09  293.0  end
u-234      2  0.0  4.77306E-06  293.0  end
u-235      2  0.0  2.95379E-04  293.0  end
u-236      2  0.0  1.08742E-04  293.0  end
u-238      2  0.0  2.14917E-02  293.0  end
np-237     2  0.0  9.99246E-06  293.0  end
pu-238     2  0.0  2.99116E-06  293.0  end
pu-239     2  0.0  1.33676E-04  293.0  end
pu-240     2  0.0  4.52922E-05  293.0  end
pu-241     2  0.0  2.87132E-05  293.0  end
pu-242     2  0.0  8.70806E-06  293.0  end
am-241     2  0.0  7.61991E-07  293.0  end
am-243     2  0.0  1.41614E-06  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  5.06994E-05  293.0  end
tc-99      3  0.0  5.61459E-05  293.0  end
ru-101     3  0.0  5.57179E-05  293.0  end
rh-103     3  0.0  2.79821E-05  293.0  end
ag-109     3  0.0  4.69054E-06  293.0  end
cs-133     3  0.0  5.72281E-05  293.0  end
nd-143     3  0.0  3.79639E-05  293.0  end
nd-145     3  0.0  3.31608E-05  293.0  end
sm-147     3  0.0  3.29644E-06  293.0  end
sm-149     3  0.0  9.68565E-08  293.0  end
sm-150     3  0.0  1.42273E-05  293.0  end
sm-151     3  0.0  5.94146E-07  293.0  end
sm-152     3  0.0  5.50897E-06  293.0  end
eu-153     3  0.0  5.85408E-06  293.0  end
gd-155     3  0.0  2.10197E-09  293.0  end
u-234      3  0.0  4.03888E-06  293.0  end
u-235      3  0.0  1.99381E-04  293.0  end
u-236      3  0.0  1.20224E-04  293.0  end
u-238      3  0.0  2.13218E-02  293.0  end
np-237     3  0.0  1.34780E-05  293.0  end
pu-238     3  0.0  5.34761E-06  293.0  end
pu-239     3  0.0  1.34721E-04  293.0  end
pu-240     3  0.0  5.50798E-05  293.0  end
pu-241     3  0.0  3.50511E-05  293.0  end
pu-242     3  0.0  1.51762E-05  293.0  end
am-241     3  0.0  1.04439E-06  293.0  end
am-243     3  0.0  2.99423E-06  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  5.96712E-05  293.0  end
tc-99      4  0.0  6.46007E-05  293.0  end
ru-101     4  0.0  6.60785E-05  293.0  end
rh-103     4  0.0  3.15433E-05  293.0  end
ag-109     4  0.0  5.93158E-06  293.0  end
cs-133     4  0.0  6.50896E-05  293.0  end
nd-143     4  0.0  4.05165E-05  293.0  end
nd-145     4  0.0  3.77725E-05  293.0  end
sm-147     4  0.0  3.77541E-06  293.0  end
sm-149     4  0.0  9.15997E-08  293.0  end
sm-150     4  0.0  1.68313E-05  293.0  end
sm-151     4  0.0  6.31352E-07  293.0  end
sm-152     4  0.0  6.26848E-06  293.0  end
eu-153     4  0.0  7.27784E-06  293.0  end
gd-155     4  0.0  2.85189E-09  293.0  end
u-234      4  0.0  3.44279E-06  293.0  end
u-235      4  0.0  1.34474E-04  293.0  end
u-236      4  0.0  1.25700E-04  293.0  end
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u-238	4	0.0	2.15373E-02	293.0	end	u-238	4	0.0	2.11573E-02	293.0	end
np-237	4	0.0	8.98879E-06	293.0	end	np-237	4	0.0	1.62253E-05	293.0	end
pu-238	4	0.0	2.45348E-06	293.0	end	pu-238	4	0.0	7.90604E-06	293.0	end
pu-239	4	0.0	1.32347E-04	293.0	end	pu-239	4	0.0	1.32944E-04	293.0	end
pu-240	4	0.0	4.20805E-05	293.0	end	pu-240	4	0.0	6.14878E-05	293.0	end
pu-241	4	0.0	2.64677E-05	293.0	end	pu-241	4	0.0	3.86683E-05	293.0	end
pu-242	4	0.0	7.18613E-06	293.0	end	pu-242	4	0.0	2.20178E-05	293.0	end
am-241	4	0.0	6.68443E-07	293.0	end	am-241	4	0.0	1.20020E-06	293.0	end
am-243	4	0.0	1.08205E-06	293.0	end	am-243	4	0.0	4.89767E-06	293.0	end
o	4	0.0	4.58960E-02	293.0	end	o	4	0.0	4.58960E-02	293.0	end
mo-95	5	0.0	3.87783E-05	293.0	end	mo-95	5	0.0	6.23557E-05	293.0	end
tc-99	5	0.0	4.47706E-05	293.0	end	tc-99	5	0.0	6.71035E-05	293.0	end
ru-101	5	0.0	4.28954E-05	293.0	end	ru-101	5	0.0	6.93149E-05	293.0	end
rh-103	5	0.0	2.25436E-05	293.0	end	rh-103	5	0.0	3.24996E-05	293.0	end
ag-109	5	0.0	3.20316E-06	293.0	end	ag-109	5	0.0	6.31933E-06	293.0	end
cs-133	5	0.0	4.61945E-05	293.0	end	cs-133	5	0.0	6.73489E-05	293.0	end
nd-143	5	0.0	3.28074E-05	293.0	end	nd-143	5	0.0	4.10339E-05	293.0	end
nd-145	5	0.0	2.68052E-05	293.0	end	nd-145	5	0.0	3.91194E-05	293.0	end
sm-147	5	0.0	2.49741E-06	293.0	end	sm-147	5	0.0	3.89147E-06	293.0	end
sm-149	5	0.0	1.02987E-07	293.0	end	sm-149	5	0.0	8.98022E-08	293.0	end
sm-150	5	0.0	1.07987E-05	293.0	end	sm-150	5	0.0	1.76014E-05	293.0	end
sm-151	5	0.0	5.39957E-07	293.0	end	sm-151	5	0.0	6.41671E-07	293.0	end
sm-152	5	0.0	4.45337E-06	293.0	end	sm-152	5	0.0	6.49009E-06	293.0	end
eu-153	5	0.0	4.07942E-06	293.0	end	eu-153	5	0.0	7.70931E-06	293.0	end
gd-155	5	0.0	1.31625E-09	293.0	end	gd-155	5	0.0	3.09657E-09	293.0	end
u-234	5	0.0	4.84439E-06	293.0	end	u-234	5	0.0	3.26786E-06	293.0	end
u-235	5	0.0	3.05613E-04	293.0	end	u-235	5	0.0	1.17748E-04	293.0	end
u-236	5	0.0	1.07369E-04	293.0	end	u-236	5	0.0	1.26596E-04	293.0	end
u-238	5	0.0	2.15068E-02	293.0	end	u-238	5	0.0	2.11030E-02	293.0	end
np-237	5	0.0	9.66112E-06	293.0	end	np-237	5	0.0	1.70381E-05	293.0	end
pu-238	5	0.0	2.80716E-06	293.0	end	pu-238	5	0.0	8.76042E-06	293.0	end
pu-239	5	0.0	1.33299E-04	293.0	end	pu-239	5	0.0	1.32133E-04	293.0	end
pu-240	5	0.0	4.42526E-05	293.0	end	pu-240	5	0.0	6.30944E-05	293.0	end
pu-241	5	0.0	2.79931E-05	293.0	end	pu-241	5	0.0	3.94419E-05	293.0	end
pu-242	5	0.0	8.19047E-06	293.0	end	pu-242	5	0.0	2.43086E-05	293.0	end
am-241	5	0.0	7.31520E-07	293.0	end	am-241	5	0.0	1.22961E-06	293.0	end
am-243	5	0.0	1.29979E-06	293.0	end	am-243	5	0.0	5.58383E-06	293.0	end
o	5	0.0	4.58960E-02	293.0	end	o	5	0.0	4.58960E-02	293.0	end
mo-95	6	0.0	3.99245E-05	293.0	end	mo-95	6	0.0	6.36571E-05	293.0	end
tc-99	6	0.0	4.58684E-05	293.0	end	tc-99	6	0.0	6.83111E-05	293.0	end
ru-101	6	0.0	4.40871E-05	293.0	end	ru-101	6	0.0	7.09080E-05	293.0	end
rh-103	6	0.0	2.30946E-05	293.0	end	rh-103	6	0.0	3.29433E-05	293.0	end
ag-109	6	0.0	3.33693E-06	293.0	end	ag-109	6	0.0	6.50953E-06	293.0	end
cs-133	6	0.0	4.72788E-05	293.0	end	cs-133	6	0.0	6.84264E-05	293.0	end
nd-143	6	0.0	3.33814E-05	293.0	end	nd-143	6	0.0	4.12433E-05	293.0	end
nd-145	6	0.0	2.74260E-05	293.0	end	nd-145	6	0.0	3.97662E-05	293.0	end
sm-147	6	0.0	2.57964E-06	293.0	end	sm-147	6	0.0	3.94272E-06	293.0	end
sm-149	6	0.0	1.02528E-07	293.0	end	sm-149	6	0.0	8.89642E-08	293.0	end
sm-150	6	0.0	1.11233E-05	293.0	end	sm-150	6	0.0	1.79721E-05	293.0	end
sm-151	6	0.0	5.45540E-07	293.0	end	sm-151	6	0.0	6.46598E-07	293.0	end
sm-152	6	0.0	4.55702E-06	293.0	end	sm-152	6	0.0	6.59633E-06	293.0	end
eu-153	6	0.0	4.24185E-06	293.0	end	eu-153	6	0.0	7.91861E-06	293.0	end
gd-155	6	0.0	1.38227E-09	293.0	end	gd-155	6	0.0	3.22016E-09	293.0	end
u-234	6	0.0	4.76663E-06	293.0	end	u-234	6	0.0	3.18388E-06	293.0	end
u-235	6	0.0	2.94463E-04	293.0	end	u-235	6	0.0	1.10104E-04	293.0	end
u-236	6	0.0	1.08863E-04	293.0	end	u-236	6	0.0	1.26903E-04	293.0	end
u-238	6	0.0	2.14903E-02	293.0	end	u-238	6	0.0	2.10755E-02	293.0	end
np-237	6	0.0	1.00225E-05	293.0	end	np-237	6	0.0	1.74145E-05	293.0	end
pu-238	6	0.0	3.00813E-06	293.0	end	pu-238	6	0.0	9.18775E-06	293.0	end
pu-239	6	0.0	1.33708E-04	293.0	end	pu-239	6	0.0	1.31720E-04	293.0	end
pu-240	6	0.0	4.53853E-05	293.0	end	pu-240	6	0.0	6.38149E-05	293.0	end
pu-241	6	0.0	2.87773E-05	293.0	end	pu-241	6	0.0	3.97716E-05	293.0	end
pu-242	6	0.0	8.75567E-06	293.0	end	pu-242	6	0.0	2.54552E-05	293.0	end
am-241	6	0.0	7.64727E-07	293.0	end	am-241	6	0.0	1.24098E-06	293.0	end
am-243	6	0.0	1.42697E-06	293.0	end	am-243	6	0.0	5.93717E-06	293.0	end
o	6	0.0	4.58960E-02	293.0	end	o	6	0.0	4.58960E-02	293.0	end
mo-95	7	0.0	4.03020E-05	293.0	end	mo-95	7	0.0	6.41949E-05	293.0	end
tc-99	7	0.0	4.62299E-05	293.0	end	tc-99	7	0.0	6.88092E-05	293.0	end
ru-101	7	0.0	4.44816E-05	293.0	end	ru-101	7	0.0	7.15712E-05	293.0	end
rh-103	7	0.0	2.32748E-05	293.0	end	rh-103	7	0.0	3.31227E-05	293.0	end
ag-109	7	0.0	3.38145E-06	293.0	end	ag-109	7	0.0	6.58854E-06	293.0	end
cs-133	7	0.0	4.76350E-05	293.0	end	cs-133	7	0.0	6.88684E-05	293.0	end
nd-143	7	0.0	3.35671E-05	293.0	end	nd-143	7	0.0	4.13220E-05	293.0	end
nd-145	7	0.0	2.76300E-05	293.0	end	nd-145	7	0.0	4.00320E-05	293.0	end
sm-147	7	0.0	2.60653E-06	293.0	end	sm-147	7	0.0	3.96292E-06	293.0	end
sm-149	7	0.0	1.02369E-07	293.0	end	sm-149	7	0.0	8.86158E-08	293.0	end
sm-150	7	0.0	1.12305E-05	293.0	end	sm-150	7	0.0	1.81246E-05	293.0	end

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sm-151     7  0.0  5.47362E-07  293.0  end
sm-152     7  0.0  4.59108E-06  293.0  end
eu-153     7  0.0  4.29579E-06  293.0  end
gd-155     7  0.0  1.40447E-09  293.0  end
u-234      7  0.0  4.74102E-06  293.0  end
u-235      7  0.0  2.90831E-04  293.0  end
u-236      7  0.0  1.09344E-04  293.0  end
u-238      7  0.0  2.14850E-02  293.0  end
np-237     7  0.0  1.01420E-05  293.0  end
pu-238     7  0.0  3.07627E-06  293.0  end
pu-239     7  0.0  1.33828E-04  293.0  end
pu-240     7  0.0  4.57545E-05  293.0  end
pu-241     7  0.0  2.90311E-05  293.0  end
pu-242     7  0.0  8.94661E-06  293.0  end
am-241     7  0.0  7.75585E-07  293.0  end
am-243     7  0.0  1.47055E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.95792E-05  293.0  end
tc-99      8  0.0  4.55378E-05  293.0  end
ru-101     8  0.0  4.37271E-05  293.0  end
rh-103     8  0.0  2.29293E-05  293.0  end
ag-109     8  0.0  3.29641E-06  293.0  end
cs-133     8  0.0  4.69526E-05  293.0  end
nd-143     8  0.0  3.32102E-05  293.0  end
nd-145     8  0.0  2.72393E-05  293.0  end
sm-147     8  0.0  2.55497E-06  293.0  end
sm-149     8  0.0  1.02671E-07  293.0  end
sm-150     8  0.0  1.10254E-05  293.0  end
sm-151     8  0.0  5.43866E-07  293.0  end
sm-152     8  0.0  4.52584E-06  293.0  end
eu-153     8  0.0  4.19271E-06  293.0  end
gd-155     8  0.0  1.36216E-09  293.0  end
u-234      8  0.0  4.79005E-06  293.0  end
u-235      8  0.0  2.97803E-04  293.0  end
u-236      8  0.0  1.08419E-04  293.0  end
u-238      8  0.0  2.14952E-02  293.0  end
np-237     8  0.0  9.91337E-06  293.0  end
pu-238     8  0.0  2.94667E-06  293.0  end
pu-239     8  0.0  1.33592E-04  293.0  end
pu-240     8  0.0  4.50459E-05  293.0  end
pu-241     8  0.0  2.85432E-05  293.0  end
pu-242     8  0.0  8.58315E-06  293.0  end
am-241     8  0.0  7.54760E-07  293.0  end
am-243     8  0.0  1.38782E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  3.85161E-05  293.0  end
tc-99      9  0.0  4.45193E-05  293.0  end
ru-101     9  0.0  4.26241E-05  293.0  end
rh-103     9  0.0  2.24167E-05  293.0  end
ag-109     9  0.0  3.17286E-06  293.0  end
cs-133     9  0.0  4.59459E-05  293.0  end
nd-143     9  0.0  3.26739E-05  293.0  end
nd-145     9  0.0  2.66628E-05  293.0  end
sm-147     9  0.0  2.47847E-06  293.0  end
sm-149     9  0.0  1.03087E-07  293.0  end
sm-150     9  0.0  1.07246E-05  293.0  end
sm-151     9  0.0  5.38669E-07  293.0  end
sm-152     9  0.0  4.42961E-06  293.0  end
eu-153     9  0.0  4.04254E-06  293.0  end
gd-155     9  0.0  1.30144E-09  293.0  end
u-234      9  0.0  4.86219E-06  293.0  end
u-235      9  0.0  3.08189E-04  293.0  end
u-236      9  0.0  1.07020E-04  293.0  end
u-238      9  0.0  2.15106E-02  293.0  end
np-237     9  0.0  9.57877E-06  293.0  end
pu-238     9  0.0  2.76242E-06  293.0  end
pu-239     9  0.0  1.33196E-04  293.0  end
pu-240     9  0.0  4.39911E-05  293.0  end
pu-241     9  0.0  2.78109E-05  293.0  end
pu-242     9  0.0  8.06416E-06  293.0  end
am-241     9  0.0  7.23880E-07  293.0  end
am-243     9  0.0  1.27181E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  3.77225E-05  293.0  end
tc-99     10  0.0  4.37585E-05  293.0  end
ru-101    10  0.0  4.18054E-05  293.0  end
rh-103    10  0.0  2.20313E-05  293.0  end
```

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sm-151     7  0.0  6.48610E-07  293.0  end
sm-152     7  0.0  6.64004E-06  293.0  end
eu-153     7  0.0  8.00504E-06  293.0  end
gd-155     7  0.0  3.27190E-09  293.0  end
u-234      7  0.0  3.14936E-06  293.0  end
u-235      7  0.0  1.07033E-04  293.0  end
u-236      7  0.0  1.27003E-04  293.0  end
u-238      7  0.0  2.10638E-02  293.0  end
np-237     7  0.0  1.75686E-05  293.0  end
pu-238     7  0.0  9.36658E-06  293.0  end
pu-239     7  0.0  1.31543E-04  293.0  end
pu-240     7  0.0  6.41029E-05  293.0  end
pu-241     7  0.0  3.98988E-05  293.0  end
pu-242     7  0.0  2.59358E-05  293.0  end
am-241     7  0.0  1.24514E-06  293.0  end
am-243     7  0.0  6.08700E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.35416E-05  293.0  end
tc-99      8  0.0  6.82041E-05  293.0  end
ru-101     8  0.0  7.07660E-05  293.0  end
rh-103     8  0.0  3.29044E-05  293.0  end
ag-109     8  0.0  6.49260E-06  293.0  end
cs-133     8  0.0  6.83313E-05  293.0  end
nd-143     8  0.0  4.12258E-05  293.0  end
nd-145     8  0.0  3.97090E-05  293.0  end
sm-147     8  0.0  3.93831E-06  293.0  end
sm-149     8  0.0  8.90389E-08  293.0  end
sm-150     8  0.0  1.79393E-05  293.0  end
sm-151     8  0.0  6.46165E-07  293.0  end
sm-152     8  0.0  6.58693E-06  293.0  end
eu-153     8  0.0  7.90004E-06  293.0  end
gd-155     8  0.0  3.20910E-09  293.0  end
u-234      8  0.0  3.19131E-06  293.0  end
u-235      8  0.0  1.10770E-04  293.0  end
u-236      8  0.0  1.26880E-04  293.0  end
u-238      8  0.0  2.10779E-02  293.0  end
np-237     8  0.0  1.73813E-05  293.0  end
pu-238     8  0.0  9.14952E-06  293.0  end
pu-239     8  0.0  1.31758E-04  293.0  end
pu-240     8  0.0  6.37523E-05  293.0  end
pu-241     8  0.0  3.97436E-05  293.0  end
pu-242     8  0.0  2.53525E-05  293.0  end
am-241     8  0.0  1.24005E-06  293.0  end
am-243     8  0.0  5.90529E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  6.25017E-05  293.0  end
tc-99      9  0.0  6.72392E-05  293.0  end
ru-101     9  0.0  6.94929E-05  293.0  end
rh-103     9  0.0  3.25501E-05  293.0  end
ag-109     9  0.0  6.34060E-06  293.0  end
cs-133     9  0.0  6.74704E-05  293.0  end
nd-143     9  0.0  4.10587E-05  293.0  end
nd-145     9  0.0  3.91922E-05  293.0  end
sm-147     9  0.0  3.89739E-06  293.0  end
sm-149     9  0.0  8.97077E-08  293.0  end
sm-150     9  0.0  1.76431E-05  293.0  end
sm-151     9  0.0  6.42227E-07  293.0  end
sm-152     9  0.0  6.50205E-06  293.0  end
eu-153     9  0.0  7.73280E-06  293.0  end
gd-155     9  0.0  3.11030E-09  293.0  end
u-234      9  0.0  3.25841E-06  293.0  end
u-235      9  0.0  1.16875E-04  293.0  end
u-236      9  0.0  1.26635E-04  293.0  end
u-238      9  0.0  2.10999E-02  293.0  end
np-237     9  0.0  1.70808E-05  293.0  end
pu-238     9  0.0  8.80797E-06  293.0  end
pu-239     9  0.0  1.32088E-04  293.0  end
pu-240     9  0.0  6.31770E-05  293.0  end
pu-241     9  0.0  3.94804E-05  293.0  end
pu-242     9  0.0  2.44361E-05  293.0  end
am-241     9  0.0  1.23098E-06  293.0  end
am-243     9  0.0  5.62282E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  6.17218E-05  293.0  end
tc-99     10  0.0  6.65140E-05  293.0  end
ru-101    10  0.0  6.85447E-05  293.0  end
rh-103    10  0.0  3.22787E-05  293.0  end
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ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
u-235    11  0.0  3.22255E-04  293.0  end
u-236    11  0.0  1.05095E-04  293.0  end
u-238    11  0.0  2.15307E-02  293.0  end
np-237   11  0.0  9.13701E-06  293.0  end
pu-238   11  0.0  2.52920E-06  293.0  end
pu-239   11  0.0  1.32580E-04  293.0  end
pu-240   11  0.0  4.25667E-05  293.0  end
pu-241   11  0.0  2.68115E-05  293.0  end
pu-242   11  0.0  7.40231E-06  293.0  end
am-241   11  0.0  6.82477E-07  293.0  end
am-243   11  0.0  1.12799E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  3.63734E-05  293.0  end
tc-99    12  0.0  4.24647E-05  293.0  end
ru-101   12  0.0  4.04227E-05  293.0  end
rh-103   12  0.0  2.13720E-05  293.0  end
ag-109   12  0.0  2.92939E-06  293.0  end
cs-133   12  0.0  4.39058E-05  293.0  end
nd-143   12  0.0  3.15532E-05  293.0  end
nd-145   12  0.0  2.54971E-05  293.0  end
sm-147   12  0.0  2.32256E-06  293.0  end
sm-149   12  0.0  1.03836E-07  293.0  end
sm-150   12  0.0  1.01227E-05  293.0  end
sm-151   12  0.0  5.27971E-07  293.0  end
sm-152   12  0.0  4.23447E-06  293.0  end
eu-153   12  0.0  3.74564E-06  293.0  end
gd-155   12  0.0  1.18433E-09  293.0  end
u-234    12  0.0  5.00751E-06  293.0  end
u-235    12  0.0  3.29615E-04  293.0  end
u-236    12  0.0  1.04069E-04  293.0  end
u-238    12  0.0  2.15407E-02  293.0  end
np-237   12  0.0  8.91104E-06  293.0  end
pu-238   12  0.0  2.41426E-06  293.0  end
pu-239   12  0.0  1.32218E-04  293.0  end
pu-240   12  0.0  4.18236E-05  293.0  end
pu-241   12  0.0  2.62856E-05  293.0  end
pu-242   12  0.0  7.07391E-06  293.0  end
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ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
u-235    11  0.0  1.24735E-04  293.0  end
u-236    11  0.0  1.26254E-04  293.0  end
u-238    11  0.0  2.11266E-02  293.0  end
np-237   11  0.0  1.66955E-05  293.0  end
pu-238   11  0.0  8.39082E-06  293.0  end
pu-239   11  0.0  1.32485E-04  293.0  end
pu-240   11  0.0  6.24273E-05  293.0  end
pu-241   11  0.0  3.91285E-05  293.0  end
pu-242   11  0.0  2.33174E-05  293.0  end
am-241   11  0.0  1.21804E-06  293.0  end
am-243   11  0.0  5.28382E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  6.05774E-05  293.0  end
tc-99    12  0.0  6.54472E-05  293.0  end
ru-101   12  0.0  6.71636E-05  293.0  end
rh-103   12  0.0  3.18720E-05  293.0  end
ag-109   12  0.0  6.06172E-06  293.0  end
cs-133   12  0.0  6.58576E-05  293.0  end
nd-143   12  0.0  4.07041E-05  293.0  end
nd-145   12  0.0  3.82289E-05  293.0  end
sm-147   12  0.0  3.81610E-06  293.0  end
sm-149   12  0.0  9.10122E-08  293.0  end
sm-150   12  0.0  1.70919E-05  293.0  end
sm-151   12  0.0  6.34925E-07  293.0  end
sm-152   12  0.0  6.34352E-06  293.0  end
eu-153   12  0.0  7.42345E-06  293.0  end
gd-155   12  0.0  2.93373E-09  293.0  end
u-234    12  0.0  3.38349E-06  293.0  end
u-235    12  0.0  1.28685E-04  293.0  end
u-236    12  0.0  1.26040E-04  293.0  end
u-238    12  0.0  2.11393E-02  293.0  end
np-237   12  0.0  1.65004E-05  293.0  end
pu-238   12  0.0  8.19019E-06  293.0  end
pu-239   12  0.0  1.32679E-04  293.0  end
pu-240   12  0.0  6.20454E-05  293.0  end
pu-241   12  0.0  3.89470E-05  293.0  end
pu-242   12  0.0  2.27791E-05  293.0  end
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am-241	12	0.0	6.61056E-07	293.0	end
am-243	12	0.0	1.05840E-06	293.0	end
o	12	0.0	4.58960E-02	293.0	end
mo-95	13	0.0	3.56166E-05	293.0	end
tc-99	13	0.0	4.17389E-05	293.0	end
ru-101	13	0.0	3.96526E-05	293.0	end
rh-103	13	0.0	2.09998E-05	293.0	end
ag-109	13	0.0	2.84526E-06	293.0	end
cs-133	13	0.0	4.31827E-05	293.0	end
nd-143	13	0.0	3.11452E-05	293.0	end
nd-145	13	0.0	2.50844E-05	293.0	end
sm-147	13	0.0	2.26709E-06	293.0	end
sm-149	13	0.0	1.04070E-07	293.0	end
sm-150	13	0.0	9.91201E-06	293.0	end
sm-151	13	0.0	5.24130E-07	293.0	end
sm-152	13	0.0	4.16521E-06	293.0	end
eu-153	13	0.0	3.64271E-06	293.0	end
gd-155	13	0.0	1.14474E-09	293.0	end
u-234	13	0.0	5.05879E-06	293.0	end
u-235	13	0.0	3.37337E-04	293.0	end
u-236	13	0.0	1.02977E-04	293.0	end
u-238	13	0.0	2.15511E-02	293.0	end
np-237	13	0.0	8.67768E-06	293.0	end
pu-238	13	0.0	2.29860E-06	293.0	end
pu-239	13	0.0	1.31808E-04	293.0	end
pu-240	13	0.0	4.10458E-05	293.0	end
pu-241	13	0.0	2.57321E-05	293.0	end
pu-242	13	0.0	6.74198E-06	293.0	end
am-241	13	0.0	6.38790E-07	293.0	end
am-243	13	0.0	9.89299E-07	293.0	end
o	13	0.0	4.58960E-02	293.0	end
mo-95	14	0.0	3.44576E-05	293.0	end
tc-99	14	0.0	4.06272E-05	293.0	end
ru-101	14	0.0	3.84781E-05	293.0	end
rh-103	14	0.0	2.04246E-05	293.0	end
ag-109	14	0.0	2.71820E-06	293.0	end
cs-133	14	0.0	4.20714E-05	293.0	end
nd-143	14	0.0	3.05087E-05	293.0	end
nd-145	14	0.0	2.44504E-05	293.0	end
sm-147	14	0.0	2.18173E-06	293.0	end
sm-149	14	0.0	1.04399E-07	293.0	end
sm-150	14	0.0	9.59030E-06	293.0	end
sm-151	14	0.0	5.18167E-07	293.0	end
sm-152	14	0.0	4.05863E-06	293.0	end
eu-153	14	0.0	3.48682E-06	293.0	end
gd-155	14	0.0	1.08567E-09	293.0	end
u-234	14	0.0	5.13750E-06	293.0	end
u-235	14	0.0	3.49325E-04	293.0	end
u-236	14	0.0	1.01275E-04	293.0	end
u-238	14	0.0	2.15669E-02	293.0	end
np-237	14	0.0	8.32254E-06	293.0	end
pu-238	14	0.0	2.12847E-06	293.0	end
pu-239	14	0.0	1.31120E-04	293.0	end
pu-240	14	0.0	3.98435E-05	293.0	end
pu-241	14	0.0	2.48695E-05	293.0	end
pu-242	14	0.0	6.25093E-06	293.0	end
am-241	14	0.0	6.04673E-07	293.0	end
am-243	14	0.0	8.89528E-07	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	3.26208E-05	293.0	end
tc-99	15	0.0	3.88633E-05	293.0	end
ru-101	15	0.0	3.66334E-05	293.0	end
rh-103	15	0.0	1.95056E-05	293.0	end
ag-109	15	0.0	2.52149E-06	293.0	end
cs-133	15	0.0	4.03024E-05	293.0	end
nd-143	15	0.0	2.94693E-05	293.0	end
nd-145	15	0.0	2.34409E-05	293.0	end
sm-147	15	0.0	2.04581E-06	293.0	end
sm-149	15	0.0	1.04818E-07	293.0	end
sm-150	15	0.0	9.08430E-06	293.0	end
sm-151	15	0.0	5.08550E-07	293.0	end
sm-152	15	0.0	3.88868E-06	293.0	end
eu-153	15	0.0	3.24470E-06	293.0	end
gd-155	15	0.0	9.96413E-10	293.0	end
u-234	15	0.0	5.26210E-06	293.0	end
u-235	15	0.0	3.68717E-04	293.0	end
u-236	15	0.0	9.84635E-05	293.0	end

am-241	12	0.0	1.21104E-06	293.0	end
am-243	12	0.0	5.12320E-06	293.0	end
o	12	0.0	4.58960E-02	293.0	end
mo-95	13	0.0	5.97211E-05	293.0	end
tc-99	13	0.0	6.46473E-05	293.0	end
ru-101	13	0.0	6.61380E-05	293.0	end
rh-103	13	0.0	3.15615E-05	293.0	end
ag-109	13	0.0	5.93872E-06	293.0	end
cs-133	13	0.0	6.51320E-05	293.0	end
nd-143	13	0.0	4.05272E-05	293.0	end
nd-145	13	0.0	3.77977E-05	293.0	end
sm-147	13	0.0	3.77769E-06	293.0	end
sm-149	13	0.0	9.15705E-08	293.0	end
sm-150	13	0.0	1.68457E-05	293.0	end
sm-151	13	0.0	6.31557E-07	293.0	end
sm-152	13	0.0	6.27260E-06	293.0	end
eu-153	13	0.0	7.28585E-06	293.0	end
gd-155	13	0.0	2.85644E-09	293.0	end
u-234	13	0.0	3.43952E-06	293.0	end
u-235	13	0.0	1.34152E-04	293.0	end
u-236	13	0.0	1.25719E-04	293.0	end
u-238	13	0.0	2.11563E-02	293.0	end
np-237	13	0.0	1.62400E-05	293.0	end
pu-238	13	0.0	7.92157E-06	293.0	end
pu-239	13	0.0	1.32930E-04	293.0	end
pu-240	13	0.0	6.15186E-05	293.0	end
pu-241	13	0.0	3.86844E-05	293.0	end
pu-242	13	0.0	2.20594E-05	293.0	end
am-241	13	0.0	1.20082E-06	293.0	end
am-243	13	0.0	4.90995E-06	293.0	end
o	13	0.0	4.58960E-02	293.0	end
mo-95	14	0.0	5.83173E-05	293.0	end
tc-99	14	0.0	6.33341E-05	293.0	end
ru-101	14	0.0	6.44712E-05	293.0	end
rh-103	14	0.0	3.10423E-05	293.0	end
ag-109	14	0.0	5.73898E-06	293.0	end
cs-133	14	0.0	6.39341E-05	293.0	end
nd-143	14	0.0	4.02110E-05	293.0	end
nd-145	14	0.0	3.70878E-05	293.0	end
sm-147	14	0.0	3.71195E-06	293.0	end
sm-149	14	0.0	9.22134E-08	293.0	end
sm-150	14	0.0	1.64405E-05	293.0	end
sm-151	14	0.0	6.25396E-07	293.0	end
sm-152	14	0.0	6.15690E-06	293.0	end
eu-153	14	0.0	7.06000E-06	293.0	end
gd-155	14	0.0	2.72474E-09	293.0	end
u-234	14	0.0	3.53182E-06	293.0	end
u-235	14	0.0	1.43388E-04	293.0	end
u-236	14	0.0	1.25122E-04	293.0	end
u-238	14	0.0	2.11834E-02	293.0	end
np-237	14	0.0	1.58527E-05	293.0	end
pu-238	14	0.0	7.48969E-06	293.0	end
pu-239	14	0.0	1.33284E-04	293.0	end
pu-240	14	0.0	6.06508E-05	293.0	end
pu-241	14	0.0	3.81956E-05	293.0	end
pu-242	14	0.0	2.09077E-05	293.0	end
am-241	14	0.0	1.18227E-06	293.0	end
am-243	14	0.0	4.56963E-06	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	5.59766E-05	293.0	end
tc-99	15	0.0	6.11354E-05	293.0	end
ru-101	15	0.0	6.17305E-05	293.0	end
rh-103	15	0.0	3.01438E-05	293.0	end
ag-109	15	0.0	5.41006E-06	293.0	end
cs-133	15	0.0	6.19087E-05	293.0	end
nd-143	15	0.0	3.96147E-05	293.0	end
nd-145	15	0.0	3.58942E-05	293.0	end
sm-147	15	0.0	3.59443E-06	293.0	end
sm-149	15	0.0	9.35183E-08	293.0	end
sm-150	15	0.0	1.57616E-05	293.0	end
sm-151	15	0.0	6.15679E-07	293.0	end
sm-152	15	0.0	5.96088E-06	293.0	end
eu-153	15	0.0	6.68553E-06	293.0	end
gd-155	15	0.0	2.51946E-09	293.0	end
u-234	15	0.0	3.68665E-06	293.0	end
u-235	15	0.0	1.59551E-04	293.0	end
u-236	15	0.0	1.23904E-04	293.0	end

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u-238    15  0.0  2.15906E-02  293.0  end
np-237   15  0.0  7.76651E-06  293.0  end
pu-238   15  0.0  1.87619E-06  293.0  end
pu-239   15  0.0  1.29853E-04  293.0  end
pu-240   15  0.0  3.79097E-05  293.0  end
pu-241   15  0.0  2.34701E-05  293.0  end
pu-242   15  0.0  5.51600E-06  293.0  end
am-241   15  0.0  5.50895E-07  293.0  end
am-243   15  0.0  7.45982E-07  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  2.99195E-05  293.0  end
tc-99    16  0.0  3.62688E-05  293.0  end
ru-101   16  0.0  3.39560E-05  293.0  end
rh-103   16  0.0  1.81361E-05  293.0  end
ag-109   16  0.0  2.24298E-06  293.0  end
cs-133   16  0.0  3.76852E-05  293.0  end
nd-143   16  0.0  2.78782E-05  293.0  end
nd-145   16  0.0  2.19504E-05  293.0  end
sm-147   16  0.0  1.84561E-06  293.0  end
sm-149   16  0.0  1.05235E-07  293.0  end
sm-150   16  0.0  8.35010E-06  293.0  end
sm-151   16  0.0  4.94038E-07  293.0  end
sm-152   16  0.0  3.63625E-06  293.0  end
eu-153   16  0.0  2.90044E-06  293.0  end
gd-155   16  0.0  8.74616E-10  293.0  end
u-234    16  0.0  5.44532E-06  293.0  end
u-235    16  0.0  3.98079E-04  293.0  end
u-236    16  0.0  9.41026E-05  293.0  end
u-238    16  0.0  2.16255E-02  293.0  end
np-237   16  0.0  6.96587E-06  293.0  end
pu-238   16  0.0  1.54255E-06  293.0  end
pu-239   16  0.0  1.27582E-04  293.0  end
pu-240   16  0.0  3.50137E-05  293.0  end
pu-241   16  0.0  2.13511E-05  293.0  end
pu-242   16  0.0  4.53056E-06  293.0  end
am-241   16  0.0  4.73250E-07  293.0  end
am-243   16  0.0  5.65454E-07  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  2.49846E-05  293.0  end
tc-99    17  0.0  3.15498E-05  293.0  end
ru-101   17  0.0  2.97112E-05  293.0  end
rh-103   17  0.0  1.62961E-05  293.0  end
ag-109   17  0.0  2.01934E-06  293.0  end
cs-133   17  0.0  3.27452E-05  293.0  end
nd-143   17  0.0  2.52787E-05  293.0  end
nd-145   17  0.0  1.91118E-05  293.0  end
sm-147   17  0.0  1.39790E-06  293.0  end
sm-149   17  0.0  1.51262E-07  293.0  end
sm-150   17  0.0  7.32690E-06  293.0  end
sm-151   17  0.0  6.27006E-07  293.0  end
sm-152   17  0.0  3.07161E-06  293.0  end
eu-153   17  0.0  2.53023E-06  293.0  end
gd-155   17  0.0  1.15135E-09  293.0  end
u-234    17  0.0  5.45399E-06  293.0  end
u-235    17  0.0  4.75122E-04  293.0  end
u-236    17  0.0  8.71458E-05  293.0  end
u-238    17  0.0  2.15984E-02  293.0  end
np-237   17  0.0  7.21537E-06  293.0  end
pu-238   17  0.0  1.51896E-06  293.0  end
pu-239   17  0.0  1.67460E-04  293.0  end
pu-240   17  0.0  3.39682E-05  293.0  end
pu-241   17  0.0  2.28112E-05  293.0  end
pu-242   17  0.0  3.46675E-06  293.0  end
am-241   17  0.0  4.63818E-07  293.0  end
am-243   17  0.0  4.63625E-07  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  1.73104E-05  293.0  end
tc-99    18  0.0  2.41222E-05  293.0  end
ru-101   18  0.0  2.22734E-05  293.0  end
rh-103   18  0.0  1.19898E-05  293.0  end
ag-109   18  0.0  1.29862E-06  293.0  end
cs-133   18  0.0  2.51558E-05  293.0  end
nd-143   18  0.0  1.97172E-05  293.0  end
nd-145   18  0.0  1.47806E-05  293.0  end
sm-147   18  0.0  9.06763E-07  293.0  end
sm-149   18  0.0  1.42348E-07  293.0  end
sm-150   18  0.0  5.28886E-06  293.0  end
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u-238    15  0.0  2.12279E-02  293.0  end
np-237   15  0.0  1.51594E-05  293.0  end
pu-238   15  0.0  6.79175E-06  293.0  end
pu-239   15  0.0  1.33837E-04  293.0  end
pu-240   15  0.0  5.90808E-05  293.0  end
pu-241   15  0.0  3.73309E-05  293.0  end
pu-242   15  0.0  1.90485E-05  293.0  end
am-241   15  0.0  1.14652E-06  293.0  end
am-243   15  0.0  4.03851E-06  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  5.23242E-05  293.0  end
tc-99    16  0.0  5.76858E-05  293.0  end
ru-101   16  0.0  5.75451E-05  293.0  end
rh-103   16  0.0  2.86662E-05  293.0  end
ag-109   16  0.0  4.90848E-06  293.0  end
cs-133   16  0.0  5.86844E-05  293.0  end
nd-143   16  0.0  3.85167E-05  293.0  end
nd-145   16  0.0  3.40075E-05  293.0  end
sm-147   16  0.0  3.39266E-06  293.0  end
sm-149   16  0.0  9.58510E-08  293.0  end
sm-150   16  0.0  1.46999E-05  293.0  end
sm-151   16  0.0  6.00904E-07  293.0  end
sm-152   16  0.0  5.64916E-06  293.0  end
eu-153   16  0.0  6.10788E-06  293.0  end
gd-155   16  0.0  2.22590E-09  293.0  end
u-234    16  0.0  3.93006E-06  293.0  end
u-235    16  0.0  1.86627E-04  293.0  end
u-236    16  0.0  1.21491E-04  293.0  end
u-238    16  0.0  2.12937E-02  293.0  end
np-237   16  0.0  1.40001E-05  293.0  end
pu-238   16  0.0  5.77184E-06  293.0  end
pu-239   16  0.0  1.34521E-04  293.0  end
pu-240   16  0.0  5.63694E-05  293.0  end
pu-241   16  0.0  3.58101E-05  293.0  end
pu-242   16  0.0  1.63183E-05  293.0  end
am-241   16  0.0  1.07879E-06  293.0  end
am-243   16  0.0  3.29464E-06  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  4.53387E-05  293.0  end
tc-99    17  0.0  5.10893E-05  293.0  end
ru-101   17  0.0  5.09628E-05  293.0  end
rh-103   17  0.0  2.72065E-05  293.0  end
ag-109   17  0.0  4.38946E-06  293.0  end
cs-133   17  0.0  5.20060E-05  293.0  end
nd-143   17  0.0  3.81946E-05  293.0  end
nd-145   17  0.0  3.02590E-05  293.0  end
sm-147   17  0.0  2.69260E-06  293.0  end
sm-149   17  0.0  1.61536E-07  293.0  end
sm-150   17  0.0  1.31508E-05  293.0  end
sm-151   17  0.0  8.62618E-07  293.0  end
sm-152   17  0.0  4.84635E-06  293.0  end
eu-153   17  0.0  5.37101E-06  293.0  end
gd-155   17  0.0  3.39934E-09  293.0  end
u-234    17  0.0  4.02008E-06  293.0  end
u-235    17  0.0  2.82758E-04  293.0  end
u-236    17  0.0  1.15231E-04  293.0  end
u-238    17  0.0  2.12574E-02  293.0  end
np-237   17  0.0  1.48982E-05  293.0  end
pu-238   17  0.0  5.78822E-06  293.0  end
pu-239   17  0.0  2.00871E-04  293.0  end
pu-240   17  0.0  5.82008E-05  293.0  end
pu-241   17  0.0  4.38693E-05  293.0  end
pu-242   17  0.0  1.22803E-05  293.0  end
am-241   17  0.0  1.34344E-06  293.0  end
am-243   17  0.0  2.68159E-06  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  3.42666E-05  293.0  end
tc-99    18  0.0  4.04857E-05  293.0  end
ru-101   18  0.0  3.91026E-05  293.0  end
rh-103   18  0.0  2.13892E-05  293.0  end
ag-109   18  0.0  3.02721E-06  293.0  end
cs-133   18  0.0  4.16939E-05  293.0  end
nd-143   18  0.0  3.15008E-05  293.0  end
nd-145   18  0.0  2.42500E-05  293.0  end
sm-147   18  0.0  2.00967E-06  293.0  end
sm-149   18  0.0  1.57841E-07  293.0  end
sm-150   18  0.0  9.92606E-06  293.0  end
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 sm-151   18  0.0  5.37314E-07  293.0  end
 sm-152   18  0.0  2.34710E-06  293.0  end
 eu-153   18  0.0  1.64874E-06  293.0  end
 gd-155   18  0.0  7.01769E-10  293.0  end
 u-234    18  0.0  6.02958E-06  293.0  end
 u-235    18  0.0  5.63255E-04  293.0  end
 u-236    18  0.0  7.20874E-05  293.0  end
 u-238    18  0.0  2.17085E-02  293.0  end
 np-237   18  0.0  4.70199E-06  293.0  end
 pu-238   18  0.0  7.31742E-07  293.0  end
 pu-239   18  0.0  1.45650E-04  293.0  end
 pu-240   18  0.0  2.42397E-05  293.0  end
 pu-241   18  0.0  1.46019E-05  293.0  end
 pu-242   18  0.0  1.61382E-06  293.0  end
 am-241   18  0.0  2.28391E-07  293.0  end
 am-243   18  0.0  1.58691E-07  293.0  end
 o        18  0.0  4.58960E-02  293.0  end
 mo-95    19  0.0  3.60489E-06  293.0  end
 tc-99    19  0.0  9.62205E-06  293.0  end
 ru-101   19  0.0  8.62330E-06  293.0  end
 rh-103   19  0.0  3.72052E-06  293.0  end
 ag-109   19  0.0  2.80964E-07  293.0  end
 cs-133   19  0.0  1.00124E-05  293.0  end
 nd-143   19  0.0  7.82217E-06  293.0  end
 nd-145   19  0.0  6.11608E-06  293.0  end
 sm-147   19  0.0  1.66025E-07  293.0  end
 sm-149   19  0.0  1.12591E-07  293.0  end
 sm-150   19  0.0  1.77893E-06  293.0  end
 sm-151   19  0.0  3.39708E-07  293.0  end
 sm-152   19  0.0  8.48281E-07  293.0  end
 eu-153   19  0.0  4.06906E-07  293.0  end
 gd-155   19  0.0  2.38783E-10  293.0  end
 u-234    19  0.0  7.18904E-06  293.0  end
 u-235    19  0.0  7.63846E-04  293.0  end
 u-236    19  0.0  3.50434E-05  293.0  end
 u-238    19  0.0  2.18987E-02  293.0  end
 np-237   19  0.0  1.12639E-06  293.0  end
 pu-238   19  0.0  6.67749E-08  293.0  end
 pu-239   19  0.0  7.78525E-05  293.0  end
 pu-240   19  0.0  6.56349E-06  293.0  end
 pu-241   19  0.0  2.16806E-06  293.0  end
 pu-242   19  0.0  8.57529E-08  293.0  end
 am-241   19  0.0  1.30160E-08  293.0  end
 am-243   19  0.0  2.92719E-09  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
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 sm-152   18  0.0  3.90359E-06  293.0  end
 eu-153   18  0.0  3.75341E-06  293.0  end
 gd-155   18  0.0  1.96535E-09  293.0  end
 u-234    18  0.0  4.78195E-06  293.0  end
 u-235    18  0.0  3.80319E-04  293.0  end
 u-236    18  0.0  1.02041E-04  293.0  end
 u-238    18  0.0  2.14533E-02  293.0  end
 np-237   18  0.0  1.06080E-05  293.0  end
 pu-238   18  0.0  3.02951E-06  293.0  end
 pu-239   18  0.0  1.86207E-04  293.0  end
 pu-240   18  0.0  4.54577E-05  293.0  end
 pu-241   18  0.0  3.28165E-05  293.0  end
 pu-242   18  0.0  6.77733E-06  293.0  end
 am-241   18  0.0  8.35494E-07  293.0  end
 am-243   18  0.0  1.18983E-06  293.0  end
 o        18  0.0  4.58960E-02  293.0  end
 mo-95    19  0.0  1.07992E-05  293.0  end
 tc-99    19  0.0  1.76762E-05  293.0  end
 ru-101   19  0.0  1.60668E-05  293.0  end
 rh-103   19  0.0  8.25125E-06  293.0  end
 ag-109   19  0.0  7.75062E-07  293.0  end
 cs-133   19  0.0  1.84718E-05  293.0  end
 nd-143   19  0.0  1.46035E-05  293.0  end
 nd-145   19  0.0  1.09672E-05  293.0  end
 sm-147   19  0.0  5.27112E-07  293.0  end
 sm-149   19  0.0  1.31370E-07  293.0  end
 sm-150   19  0.0  3.63945E-06  293.0  end
 sm-151   19  0.0  4.57408E-07  293.0  end
 sm-152   19  0.0  1.69108E-06  293.0  end
 eu-153   19  0.0  1.00906E-06  293.0  end
 gd-155   19  0.0  4.44172E-10  293.0  end
 u-234    19  0.0  6.53976E-06  293.0  end
 u-235    19  0.0  6.47341E-04  293.0  end
 u-236    19  0.0  5.69246E-05  293.0  end
 u-238    19  0.0  2.17965E-02  293.0  end
 np-237   19  0.0  2.86069E-06  293.0  end
 pu-238   19  0.0  3.20752E-07  293.0  end
 pu-239   19  0.0  1.20509E-04  293.0  end
 pu-240   19  0.0  1.59776E-05  293.0  end
 pu-241   19  0.0  8.15522E-06  293.0  end
 pu-242   19  0.0  6.30115E-07  293.0  end
 am-241   19  0.0  9.26971E-08  293.0  end
 am-243   19  0.0  4.31533E-08  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ
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EOF ed24_f01_id03135_b50.mip

File ed24_f01_id03657_b30.mip

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 lfd.Nr.:   1 aus sha_alf.mod


 mo-95     1  0.0  4.67069E-06  293.0  end
 tc-99     1  0.0  1.09863E-05  293.0  end
 ru-101    1  0.0  9.76043E-06  293.0  end
 rh-103    1  0.0  4.33782E-06  293.0  end
 ag-109    1  0.0  2.96840E-07  293.0  end
 cs-133    1  0.0  1.14667E-05  293.0  end
 nd-143    1  0.0  9.00927E-06  293.0  end
 nd-145    1  0.0  6.97408E-06  293.0  end
 sm-147    1  0.0  2.19762E-07  293.0  end
 sm-149    1  0.0  9.14633E-08  293.0  end
 sm-150    1  0.0  2.03663E-06  293.0  end
 sm-151    1  0.0  3.17012E-07  293.0  end
 sm-152    1  0.0  1.00990E-06  293.0  end
 eu-153    1  0.0  4.53614E-07  293.0  end
 gd-155    1  0.0  2.04788E-10  293.0  end
 u-234     1  0.0  7.22023E-06  293.0  end
 u-235     1  0.0  7.38873E-04  293.0  end
 u-236     1  0.0  3.73654E-05  293.0  end
 u-238     1  0.0  2.19107E-02  293.0  end
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File ed24_f01_id03657_b50.mip

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 lfd.Nr.:   2 aus sha_alf.mod


 mo-95     1  0.0  1.26482E-05  293.0  end
 tc-99     1  0.0  1.95368E-05  293.0  end
 ru-101    1  0.0  1.75918E-05  293.0  end
 rh-103    1  0.0  9.00247E-06  293.0  end
 ag-109    1  0.0  7.84850E-07  293.0  end
 cs-133    1  0.0  2.04575E-05  293.0  end
 nd-143    1  0.0  1.60256E-05  293.0  end
 nd-145    1  0.0  1.21365E-05  293.0  end
 sm-147    1  0.0  6.53922E-07  293.0  end
 sm-149    1  0.0  1.00426E-07  293.0  end
 sm-150    1  0.0  3.97195E-06  293.0  end
 sm-151    1  0.0  3.89219E-07  293.0  end
 sm-152    1  0.0  1.93048E-06  293.0  end
 eu-153    1  0.0  1.07424E-06  293.0  end
 gd-155    1  0.0  3.43221E-10  293.0  end
 u-234     1  0.0  6.62234E-06  293.0  end
 u-235     1  0.0  6.11882E-04  293.0  end
 u-236     1  0.0  5.95161E-05  293.0  end
 u-238     1  0.0  2.18235E-02  293.0  end
```

np-237	1	0.0	1.05409E-06	293.0	end
pu-238	1	0.0	6.33352E-08	293.0	end
pu-239	1	0.0	6.66489E-05	293.0	end
pu-240	1	0.0	6.76284E-06	293.0	end
pu-241	1	0.0	2.13231E-06	293.0	end
pu-242	1	0.0	1.00259E-07	293.0	end
am-241	1	0.0	1.44253E-08	293.0	end
am-243	1	0.0	3.04791E-09	293.0	end
o	1	0.0	4.58960E-02	293.0	end
mo-95	2	0.0	2.12313E-05	293.0	end
tc-99	2	0.0	2.79087E-05	293.0	end
ru-101	2	0.0	2.55954E-05	293.0	end
rh-103	2	0.0	1.36186E-05	293.0	end
ag-109	2	0.0	1.43798E-06	293.0	end
cs-133	2	0.0	2.91472E-05	293.0	end
nd-143	2	0.0	2.22842E-05	293.0	end
nd-145	2	0.0	1.70912E-05	293.0	end
sm-147	2	0.0	1.21594E-06	293.0	end
sm-149	2	0.0	1.04634E-07	293.0	end
sm-150	2	0.0	6.07782E-06	293.0	end
sm-151	2	0.0	4.44308E-07	293.0	end
sm-152	2	0.0	2.80210E-06	293.0	end
eu-153	2	0.0	1.89643E-06	293.0	end
gd-155	2	0.0	5.57124E-10	293.0	end
u-234	2	0.0	6.03439E-06	293.0	end
u-235	2	0.0	4.99519E-04	293.0	end
u-236	2	0.0	7.82335E-05	293.0	end
u-238	2	0.0	2.17298E-02	293.0	end
np-237	2	0.0	4.56568E-06	293.0	end
pu-238	2	0.0	7.41492E-07	293.0	end
pu-239	2	0.0	1.16328E-04	293.0	end
pu-240	2	0.0	2.54122E-05	293.0	end
pu-241	2	0.0	1.42574E-05	293.0	end
pu-242	2	0.0	2.09726E-06	293.0	end
am-241	2	0.0	2.49228E-07	293.0	end
am-243	2	0.0	1.91755E-07	293.0	end
o	2	0.0	4.58960E-02	293.0	end
mo-95	3	0.0	2.90427E-05	293.0	end
tc-99	3	0.0	3.54266E-05	293.0	end
ru-101	3	0.0	3.30957E-05	293.0	end
rh-103	3	0.0	1.76880E-05	293.0	end
ag-109	3	0.0	2.15539E-06	293.0	end
cs-133	3	0.0	3.68325E-05	293.0	end
nd-143	3	0.0	2.73465E-05	293.0	end
nd-145	3	0.0	2.14648E-05	293.0	end
sm-147	3	0.0	1.78074E-06	293.0	end
sm-149	3	0.0	1.05311E-07	293.0	end
sm-150	3	0.0	8.11454E-06	293.0	end
sm-151	3	0.0	4.89233E-07	293.0	end
sm-152	3	0.0	3.55372E-06	293.0	end
eu-153	3	0.0	2.79184E-06	293.0	end
gd-155	3	0.0	8.37506E-10	293.0	end
u-234	3	0.0	5.50475E-06	293.0	end
u-235	3	0.0	4.07826E-04	293.0	end
u-236	3	0.0	9.26287E-05	293.0	end
u-238	3	0.0	2.16368E-02	293.0	end
np-237	3	0.0	6.71084E-06	293.0	end
pu-238	3	0.0	1.44346E-06	293.0	end
pu-239	3	0.0	1.26732E-04	293.0	end
pu-240	3	0.0	3.40627E-05	293.0	end
pu-241	3	0.0	2.06501E-05	293.0	end
pu-242	3	0.0	4.23479E-06	293.0	end
am-241	3	0.0	4.48617E-07	293.0	end
am-243	3	0.0	5.14189E-07	293.0	end
o	3	0.0	4.58960E-02	293.0	end
mo-95	4	0.0	3.66247E-05	293.0	end
tc-99	4	0.0	4.27056E-05	293.0	end
ru-101	4	0.0	4.06791E-05	293.0	end
rh-103	4	0.0	2.14951E-05	293.0	end
ag-109	4	0.0	2.95753E-06	293.0	end
cs-133	4	0.0	4.41455E-05	293.0	end
nd-143	4	0.0	3.16872E-05	293.0	end
nd-145	4	0.0	2.56340E-05	293.0	end
sm-147	4	0.0	2.34093E-06	293.0	end
sm-149	4	0.0	1.03755E-07	293.0	end
sm-150	4	0.0	1.01928E-05	293.0	end
sm-151	4	0.0	5.29238E-07	293.0	end

np-237	1	0.0	2.56224E-06	293.0	end
pu-238	1	0.0	2.82537E-07	293.0	end
pu-239	1	0.0	9.73220E-05	293.0	end
pu-240	1	0.0	1.57889E-05	293.0	end
pu-241	1	0.0	7.44622E-06	293.0	end
pu-242	1	0.0	6.91114E-07	293.0	end
am-241	1	0.0	9.13615E-08	293.0	end
am-243	1	0.0	4.11972E-08	293.0	end
o	1	0.0	4.58960E-02	293.0	end
mo-95	2	0.0	3.98296E-05	293.0	end
tc-99	2	0.0	4.57776E-05	293.0	end
ru-101	2	0.0	4.39881E-05	293.0	end
rh-103	2	0.0	2.30492E-05	293.0	end
ag-109	2	0.0	3.32577E-06	293.0	end
cs-133	2	0.0	4.71892E-05	293.0	end
nd-143	2	0.0	3.33345E-05	293.0	end
nd-145	2	0.0	2.73747E-05	293.0	end
sm-147	2	0.0	2.57287E-06	293.0	end
sm-149	2	0.0	1.02568E-07	293.0	end
sm-150	2	0.0	1.10964E-05	293.0	end
sm-151	2	0.0	5.45081E-07	293.0	end
sm-152	2	0.0	4.54846E-06	293.0	end
eu-153	2	0.0	4.22833E-06	293.0	end
gd-155	2	0.0	1.37673E-09	293.0	end
u-234	2	0.0	4.77306E-06	293.0	end
u-235	2	0.0	2.95379E-04	293.0	end
u-236	2	0.0	1.08742E-04	293.0	end
u-238	2	0.0	2.14917E-02	293.0	end
np-237	2	0.0	9.99246E-06	293.0	end
pu-238	2	0.0	2.99116E-06	293.0	end
pu-239	2	0.0	1.33676E-04	293.0	end
pu-240	2	0.0	4.52922E-05	293.0	end
pu-241	2	0.0	2.87132E-05	293.0	end
pu-242	2	0.0	8.70806E-06	293.0	end
am-241	2	0.0	7.61991E-07	293.0	end
am-243	2	0.0	1.41614E-06	293.0	end
o	2	0.0	4.58960E-02	293.0	end
mo-95	3	0.0	5.06994E-05	293.0	end
tc-99	3	0.0	5.61459E-05	293.0	end
ru-101	3	0.0	5.57179E-05	293.0	end
rh-103	3	0.0	2.79821E-05	293.0	end
ag-109	3	0.0	4.69054E-06	293.0	end
cs-133	3	0.0	5.72281E-05	293.0	end
nd-143	3	0.0	3.79639E-05	293.0	end
nd-145	3	0.0	3.31608E-05	293.0	end
sm-147	3	0.0	3.29644E-06	293.0	end
sm-149	3	0.0	9.68565E-08	293.0	end
sm-150	3	0.0	1.42273E-05	293.0	end
sm-151	3	0.0	5.94146E-07	293.0	end
sm-152	3	0.0	5.50897E-06	293.0	end
eu-153	3	0.0	5.85408E-06	293.0	end
gd-155	3	0.0	2.10197E-09	293.0	end
u-234	3	0.0	4.03888E-06	293.0	end
u-235	3	0.0	1.99381E-04	293.0	end
u-236	3	0.0	1.20224E-04	293.0	end
u-238	3	0.0	2.13218E-02	293.0	end
np-237	3	0.0	1.34780E-05	293.0	end
pu-238	3	0.0	5.34761E-06	293.0	end
pu-239	3	0.0	1.34721E-04	293.0	end
pu-240	3	0.0	5.50798E-05	293.0	end
pu-241	3	0.0	3.50511E-05	293.0	end
pu-242	3	0.0	1.51762E-05	293.0	end
am-241	3	0.0	1.04439E-06	293.0	end
am-243	3	0.0	2.99423E-06	293.0	end
o	3	0.0	4.58960E-02	293.0	end
mo-95	4	0.0	5.96712E-05	293.0	end
tc-99	4	0.0	6.46007E-05	293.0	end
ru-101	4	0.0	6.60785E-05	293.0	end
rh-103	4	0.0	3.15433E-05	293.0	end
ag-109	4	0.0	5.93158E-06	293.0	end
cs-133	4	0.0	6.50896E-05	293.0	end
nd-143	4	0.0	4.05165E-05	293.0	end
nd-145	4	0.0	3.77725E-05	293.0	end
sm-147	4	0.0	3.77541E-06	293.0	end
sm-149	4	0.0	9.15997E-08	293.0	end
sm-150	4	0.0	1.68313E-05	293.0	end
sm-151	4	0.0	6.31352E-07	293.0	end

sm-152	4	0.0	4.25742E-06	293.0	end
eu-153	4	0.0	3.78002E-06	293.0	end
gd-155	4	0.0	1.19767E-09	293.0	end
u-234	4	0.0	4.99050E-06	293.0	end
u-235	4	0.0	3.27069E-04	293.0	end
u-236	4	0.0	1.04426E-04	293.0	end
u-238	4	0.0	2.15373E-02	293.0	end
np-237	4	0.0	8.98879E-06	293.0	end
pu-238	4	0.0	2.45348E-06	293.0	end
pu-239	4	0.0	1.32347E-04	293.0	end
pu-240	4	0.0	4.20805E-05	293.0	end
pu-241	4	0.0	2.64677E-05	293.0	end
pu-242	4	0.0	7.18613E-06	293.0	end
am-241	4	0.0	6.68443E-07	293.0	end
am-243	4	0.0	1.08205E-06	293.0	end
o	4	0.0	4.58960E-02	293.0	end
mo-95	5	0.0	3.87783E-05	293.0	end
tc-99	5	0.0	4.47706E-05	293.0	end
ru-101	5	0.0	4.28954E-05	293.0	end
rh-103	5	0.0	2.25436E-05	293.0	end
ag-109	5	0.0	3.20316E-06	293.0	end
cs-133	5	0.0	4.61945E-05	293.0	end
nd-143	5	0.0	3.28074E-05	293.0	end
nd-145	5	0.0	2.68052E-05	293.0	end
sm-147	5	0.0	2.49741E-06	293.0	end
sm-149	5	0.0	1.02987E-07	293.0	end
sm-150	5	0.0	1.07987E-05	293.0	end
sm-151	5	0.0	5.39957E-07	293.0	end
sm-152	5	0.0	4.45337E-06	293.0	end
eu-153	5	0.0	4.07942E-06	293.0	end
gd-155	5	0.0	1.31625E-09	293.0	end
u-234	5	0.0	4.84439E-06	293.0	end
u-235	5	0.0	3.05613E-04	293.0	end
u-236	5	0.0	1.07369E-04	293.0	end
u-238	5	0.0	2.15068E-02	293.0	end
np-237	5	0.0	9.66112E-06	293.0	end
pu-238	5	0.0	2.80716E-06	293.0	end
pu-239	5	0.0	1.33299E-04	293.0	end
pu-240	5	0.0	4.42526E-05	293.0	end
pu-241	5	0.0	2.79931E-05	293.0	end
pu-242	5	0.0	8.19047E-06	293.0	end
am-241	5	0.0	7.31520E-07	293.0	end
am-243	5	0.0	1.29979E-06	293.0	end
o	5	0.0	4.58960E-02	293.0	end
mo-95	6	0.0	3.99245E-05	293.0	end
tc-99	6	0.0	4.58684E-05	293.0	end
ru-101	6	0.0	4.40871E-05	293.0	end
rh-103	6	0.0	2.30946E-05	293.0	end
ag-109	6	0.0	3.33693E-06	293.0	end
cs-133	6	0.0	4.72788E-05	293.0	end
nd-143	6	0.0	3.33814E-05	293.0	end
nd-145	6	0.0	2.74260E-05	293.0	end
sm-147	6	0.0	2.57964E-06	293.0	end
sm-149	6	0.0	1.02528E-07	293.0	end
sm-150	6	0.0	1.11233E-05	293.0	end
sm-151	6	0.0	5.45540E-07	293.0	end
sm-152	6	0.0	4.55702E-06	293.0	end
eu-153	6	0.0	4.24185E-06	293.0	end
gd-155	6	0.0	1.38227E-09	293.0	end
u-234	6	0.0	4.76663E-06	293.0	end
u-235	6	0.0	2.94463E-04	293.0	end
u-236	6	0.0	1.08863E-04	293.0	end
u-238	6	0.0	2.14903E-02	293.0	end
np-237	6	0.0	1.00225E-05	293.0	end
pu-238	6	0.0	3.00813E-06	293.0	end
pu-239	6	0.0	1.33708E-04	293.0	end
pu-240	6	0.0	4.53853E-05	293.0	end
pu-241	6	0.0	2.87773E-05	293.0	end
pu-242	6	0.0	8.75567E-06	293.0	end
am-241	6	0.0	7.64727E-07	293.0	end
am-243	6	0.0	1.42697E-06	293.0	end
o	6	0.0	4.58960E-02	293.0	end
mo-95	7	0.0	4.03020E-05	293.0	end
tc-99	7	0.0	4.62299E-05	293.0	end
ru-101	7	0.0	4.44816E-05	293.0	end
rh-103	7	0.0	2.32748E-05	293.0	end
ag-109	7	0.0	3.38145E-06	293.0	end

sm-152	4	0.0	6.26848E-06	293.0	end
eu-153	4	0.0	7.27784E-06	293.0	end
gd-155	4	0.0	2.85189E-09	293.0	end
u-234	4	0.0	3.44279E-06	293.0	end
u-235	4	0.0	1.34474E-04	293.0	end
u-236	4	0.0	1.25700E-04	293.0	end
u-238	4	0.0	2.11573E-02	293.0	end
np-237	4	0.0	1.62253E-05	293.0	end
pu-238	4	0.0	7.90604E-06	293.0	end
pu-239	4	0.0	1.32944E-04	293.0	end
pu-240	4	0.0	6.14878E-05	293.0	end
pu-241	4	0.0	3.86683E-05	293.0	end
pu-242	4	0.0	2.20178E-05	293.0	end
am-241	4	0.0	1.20020E-06	293.0	end
am-243	4	0.0	4.89767E-06	293.0	end
o	4	0.0	4.58960E-02	293.0	end
mo-95	5	0.0	6.23557E-05	293.0	end
tc-99	5	0.0	6.71035E-05	293.0	end
ru-101	5	0.0	6.93149E-05	293.0	end
rh-103	5	0.0	3.24996E-05	293.0	end
ag-109	5	0.0	6.31933E-06	293.0	end
cs-133	5	0.0	6.73489E-05	293.0	end
nd-143	5	0.0	4.10339E-05	293.0	end
nd-145	5	0.0	3.91194E-05	293.0	end
sm-147	5	0.0	3.89147E-06	293.0	end
sm-149	5	0.0	8.98022E-08	293.0	end
sm-150	5	0.0	1.76014E-05	293.0	end
sm-151	5	0.0	6.41671E-07	293.0	end
sm-152	5	0.0	6.49009E-06	293.0	end
eu-153	5	0.0	7.70931E-06	293.0	end
gd-155	5	0.0	3.09657E-09	293.0	end
u-234	5	0.0	3.26786E-06	293.0	end
u-235	5	0.0	1.17748E-04	293.0	end
u-236	5	0.0	1.26596E-04	293.0	end
u-238	5	0.0	2.11030E-02	293.0	end
np-237	5	0.0	1.70381E-05	293.0	end
pu-238	5	0.0	8.76042E-06	293.0	end
pu-239	5	0.0	1.32133E-04	293.0	end
pu-240	5	0.0	6.30944E-05	293.0	end
pu-241	5	0.0	3.94419E-05	293.0	end
pu-242	5	0.0	2.43086E-05	293.0	end
am-241	5	0.0	1.22961E-06	293.0	end
am-243	5	0.0	5.58383E-06	293.0	end
o	5	0.0	4.58960E-02	293.0	end
mo-95	6	0.0	6.36571E-05	293.0	end
tc-99	6	0.0	6.83111E-05	293.0	end
ru-101	6	0.0	7.09080E-05	293.0	end
rh-103	6	0.0	3.29433E-05	293.0	end
ag-109	6	0.0	6.50953E-06	293.0	end
cs-133	6	0.0	6.84264E-05	293.0	end
nd-143	6	0.0	4.12433E-05	293.0	end
nd-145	6	0.0	3.97662E-05	293.0	end
sm-147	6	0.0	3.94272E-06	293.0	end
sm-149	6	0.0	8.89642E-08	293.0	end
sm-150	6	0.0	1.79721E-05	293.0	end
sm-151	6	0.0	6.46598E-07	293.0	end
sm-152	6	0.0	6.59633E-06	293.0	end
eu-153	6	0.0	7.91861E-06	293.0	end
gd-155	6	0.0	3.22016E-09	293.0	end
u-234	6	0.0	3.18388E-06	293.0	end
u-235	6	0.0	1.10104E-04	293.0	end
u-236	6	0.0	1.26903E-04	293.0	end
u-238	6	0.0	2.10755E-02	293.0	end
np-237	6	0.0	1.74145E-05	293.0	end
pu-238	6	0.0	9.18775E-06	293.0	end
pu-239	6	0.0	1.31720E-04	293.0	end
pu-240	6	0.0	6.38149E-05	293.0	end
pu-241	6	0.0	3.97716E-05	293.0	end
pu-242	6	0.0	2.54552E-05	293.0	end
am-241	6	0.0	1.24098E-06	293.0	end
am-243	6	0.0	5.93717E-06	293.0	end
o	6	0.0	4.58960E-02	293.0	end
mo-95	7	0.0	6.41949E-05	293.0	end
tc-99	7	0.0	6.88092E-05	293.0	end
ru-101	7	0.0	7.15712E-05	293.0	end
rh-103	7	0.0	3.31227E-05	293.0	end
ag-109	7	0.0	6.58854E-06	293.0	end

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cs-133     7  0.0  4.76350E-05  293.0  end
nd-143     7  0.0  3.35671E-05  293.0  end
nd-145     7  0.0  2.76300E-05  293.0  end
sm-147     7  0.0  2.60653E-06  293.0  end
sm-149     7  0.0  1.02369E-07  293.0  end
sm-150     7  0.0  1.12305E-05  293.0  end
sm-151     7  0.0  5.47362E-07  293.0  end
sm-152     7  0.0  4.59108E-06  293.0  end
eu-153     7  0.0  4.29579E-06  293.0  end
gd-155     7  0.0  1.40447E-09  293.0  end
u-234      7  0.0  4.74102E-06  293.0  end
u-235      7  0.0  2.90831E-04  293.0  end
u-236      7  0.0  1.09344E-04  293.0  end
u-238      7  0.0  2.14850E-02  293.0  end
np-237     7  0.0  1.01420E-05  293.0  end
pu-238     7  0.0  3.07627E-06  293.0  end
pu-239     7  0.0  1.33828E-04  293.0  end
pu-240     7  0.0  4.57545E-05  293.0  end
pu-241     7  0.0  2.90311E-05  293.0  end
pu-242     7  0.0  8.94661E-06  293.0  end
am-241     7  0.0  7.75585E-07  293.0  end
am-243     7  0.0  1.47055E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.95792E-05  293.0  end
tc-99      8  0.0  4.55378E-05  293.0  end
ru-101     8  0.0  4.37271E-05  293.0  end
rh-103     8  0.0  2.29293E-05  293.0  end
ag-109     8  0.0  3.29641E-06  293.0  end
cs-133     8  0.0  4.69526E-05  293.0  end
nd-143     8  0.0  3.32102E-05  293.0  end
nd-145     8  0.0  2.72393E-05  293.0  end
sm-147     8  0.0  2.55497E-06  293.0  end
sm-149     8  0.0  1.02671E-07  293.0  end
sm-150     8  0.0  1.10254E-05  293.0  end
sm-151     8  0.0  5.43866E-07  293.0  end
sm-152     8  0.0  4.52584E-06  293.0  end
eu-153     8  0.0  4.19271E-06  293.0  end
gd-155     8  0.0  1.36216E-09  293.0  end
u-234      8  0.0  4.79005E-06  293.0  end
u-235      8  0.0  2.97803E-04  293.0  end
u-236      8  0.0  1.08419E-04  293.0  end
u-238      8  0.0  2.14952E-02  293.0  end
np-237     8  0.0  9.91337E-06  293.0  end
pu-238     8  0.0  2.94667E-06  293.0  end
pu-239     8  0.0  1.33592E-04  293.0  end
pu-240     8  0.0  4.50459E-05  293.0  end
pu-241     8  0.0  2.85432E-05  293.0  end
pu-242     8  0.0  8.58315E-06  293.0  end
am-241     8  0.0  7.54760E-07  293.0  end
am-243     8  0.0  1.38782E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  3.85161E-05  293.0  end
tc-99      9  0.0  4.45193E-05  293.0  end
ru-101     9  0.0  4.26241E-05  293.0  end
rh-103     9  0.0  2.24167E-05  293.0  end
ag-109     9  0.0  3.17286E-06  293.0  end
cs-133     9  0.0  4.59459E-05  293.0  end
nd-143     9  0.0  3.26739E-05  293.0  end
nd-145     9  0.0  2.66628E-05  293.0  end
sm-147     9  0.0  2.47847E-06  293.0  end
sm-149     9  0.0  1.03087E-07  293.0  end
sm-150     9  0.0  1.07246E-05  293.0  end
sm-151     9  0.0  5.38669E-07  293.0  end
sm-152     9  0.0  4.42961E-06  293.0  end
eu-153     9  0.0  4.04254E-06  293.0  end
gd-155     9  0.0  1.30144E-09  293.0  end
u-234      9  0.0  4.86219E-06  293.0  end
u-235      9  0.0  3.08189E-04  293.0  end
u-236      9  0.0  1.07020E-04  293.0  end
u-238      9  0.0  2.15106E-02  293.0  end
np-237     9  0.0  9.57877E-06  293.0  end
pu-238     9  0.0  2.76242E-06  293.0  end
pu-239     9  0.0  1.33196E-04  293.0  end
pu-240     9  0.0  4.39911E-05  293.0  end
pu-241     9  0.0  2.78109E-05  293.0  end
pu-242     9  0.0  8.06416E-06  293.0  end
am-241     9  0.0  7.23880E-07  293.0  end
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cs-133     7  0.0  6.88684E-05  293.0  end
nd-143     7  0.0  4.13220E-05  293.0  end
nd-145     7  0.0  4.00320E-05  293.0  end
sm-147     7  0.0  3.96292E-06  293.0  end
sm-149     7  0.0  8.86158E-08  293.0  end
sm-150     7  0.0  1.81246E-05  293.0  end
sm-151     7  0.0  6.48610E-07  293.0  end
sm-152     7  0.0  6.64004E-06  293.0  end
eu-153     7  0.0  8.00504E-06  293.0  end
gd-155     7  0.0  3.27190E-09  293.0  end
u-234      7  0.0  3.14936E-06  293.0  end
u-235      7  0.0  1.07033E-04  293.0  end
u-236      7  0.0  1.27003E-04  293.0  end
u-238      7  0.0  2.10638E-02  293.0  end
np-237     7  0.0  1.75686E-05  293.0  end
pu-238     7  0.0  9.36658E-06  293.0  end
pu-239     7  0.0  1.31543E-04  293.0  end
pu-240     7  0.0  6.41029E-05  293.0  end
pu-241     7  0.0  3.98988E-05  293.0  end
pu-242     7  0.0  2.59358E-05  293.0  end
am-241     7  0.0  1.24514E-06  293.0  end
am-243     7  0.0  6.08700E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.35416E-05  293.0  end
tc-99      8  0.0  6.82041E-05  293.0  end
ru-101     8  0.0  7.07660E-05  293.0  end
rh-103     8  0.0  3.29044E-05  293.0  end
ag-109     8  0.0  6.49260E-06  293.0  end
cs-133     8  0.0  6.83313E-05  293.0  end
nd-143     8  0.0  4.12258E-05  293.0  end
nd-145     8  0.0  3.97090E-05  293.0  end
sm-147     8  0.0  3.93831E-06  293.0  end
sm-149     8  0.0  8.90389E-08  293.0  end
sm-150     8  0.0  1.79393E-05  293.0  end
sm-151     8  0.0  6.46165E-07  293.0  end
sm-152     8  0.0  6.58693E-06  293.0  end
eu-153     8  0.0  7.90004E-06  293.0  end
gd-155     8  0.0  3.20910E-09  293.0  end
u-234      8  0.0  3.19131E-06  293.0  end
u-235      8  0.0  1.10770E-04  293.0  end
u-236      8  0.0  1.26880E-04  293.0  end
u-238      8  0.0  2.10779E-02  293.0  end
np-237     8  0.0  1.73813E-05  293.0  end
pu-238     8  0.0  9.14952E-06  293.0  end
pu-239     8  0.0  1.31758E-04  293.0  end
pu-240     8  0.0  6.37523E-05  293.0  end
pu-241     8  0.0  3.97436E-05  293.0  end
pu-242     8  0.0  2.53525E-05  293.0  end
am-241     8  0.0  1.24005E-06  293.0  end
am-243     8  0.0  5.90529E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  6.25017E-05  293.0  end
tc-99      9  0.0  6.72392E-05  293.0  end
ru-101     9  0.0  6.94929E-05  293.0  end
rh-103     9  0.0  3.25501E-05  293.0  end
ag-109     9  0.0  6.34060E-06  293.0  end
cs-133     9  0.0  6.74704E-05  293.0  end
nd-143     9  0.0  4.10587E-05  293.0  end
nd-145     9  0.0  3.91922E-05  293.0  end
sm-147     9  0.0  3.89739E-06  293.0  end
sm-149     9  0.0  8.97077E-08  293.0  end
sm-150     9  0.0  1.76431E-05  293.0  end
sm-151     9  0.0  6.42227E-07  293.0  end
sm-152     9  0.0  6.50205E-06  293.0  end
eu-153     9  0.0  7.73280E-06  293.0  end
gd-155     9  0.0  3.11030E-09  293.0  end
u-234      9  0.0  3.25841E-06  293.0  end
u-235      9  0.0  1.16875E-04  293.0  end
u-236      9  0.0  1.26635E-04  293.0  end
u-238      9  0.0  2.10999E-02  293.0  end
np-237     9  0.0  1.70808E-05  293.0  end
pu-238     9  0.0  8.80797E-06  293.0  end
pu-239     9  0.0  1.32088E-04  293.0  end
pu-240     9  0.0  6.31770E-05  293.0  end
pu-241     9  0.0  3.94804E-05  293.0  end
pu-242     9  0.0  2.44361E-05  293.0  end
am-241     9  0.0  1.23098E-06  293.0  end
```

am-243	9	0.0	1.27181E-06	293.0	end
o	9	0.0	4.58960E-02	293.0	end
mo-95	10	0.0	3.77225E-05	293.0	end
tc-99	10	0.0	4.37585E-05	293.0	end
ru-101	10	0.0	4.18054E-05	293.0	end
rh-103	10	0.0	2.20313E-05	293.0	end
ag-109	10	0.0	3.08180E-06	293.0	end
cs-133	10	0.0	4.51918E-05	293.0	end
nd-143	10	0.0	3.22648E-05	293.0	end
nd-145	10	0.0	2.62314E-05	293.0	end
sm-147	10	0.0	2.42095E-06	293.0	end
sm-149	10	0.0	1.03377E-07	293.0	end
sm-150	10	0.0	1.05008E-05	293.0	end
sm-151	10	0.0	5.34741E-07	293.0	end
sm-152	10	0.0	4.35752E-06	293.0	end
eu-153	10	0.0	3.93163E-06	293.0	end
gd-155	10	0.0	1.25724E-09	293.0	end
u-234	10	0.0	4.91605E-06	293.0	end
u-235	10	0.0	3.16048E-04	293.0	end
u-236	10	0.0	1.05949E-04	293.0	end
u-238	10	0.0	2.15221E-02	293.0	end
np-237	10	0.0	9.33031E-06	293.0	end
pu-238	10	0.0	2.62984E-06	293.0	end
pu-239	10	0.0	1.32863E-04	293.0	end
pu-240	10	0.0	4.31944E-05	293.0	end
pu-241	10	0.0	2.72534E-05	293.0	end
pu-242	10	0.0	7.68866E-06	293.0	end
am-241	10	0.0	7.00676E-07	293.0	end
am-243	10	0.0	1.18964E-06	293.0	end
o	10	0.0	4.58960E-02	293.0	end
mo-95	11	0.0	3.71022E-05	293.0	end
tc-99	11	0.0	4.31635E-05	293.0	end
ru-101	11	0.0	4.11680E-05	293.0	end
rh-103	11	0.0	2.17288E-05	293.0	end
ag-109	11	0.0	3.01133E-06	293.0	end
cs-133	11	0.0	4.46009E-05	293.0	end
nd-143	11	0.0	3.19401E-05	293.0	end
nd-145	11	0.0	2.58940E-05	293.0	end
sm-147	11	0.0	2.37580E-06	293.0	end
sm-149	11	0.0	1.03595E-07	293.0	end
sm-150	11	0.0	1.03265E-05	293.0	end
sm-151	11	0.0	5.31640E-07	293.0	end
sm-152	11	0.0	4.30100E-06	293.0	end
eu-153	11	0.0	3.84571E-06	293.0	end
gd-155	11	0.0	1.22334E-09	293.0	end
u-234	11	0.0	4.95812E-06	293.0	end
u-235	11	0.0	3.22255E-04	293.0	end
u-236	11	0.0	1.05095E-04	293.0	end
u-238	11	0.0	2.15307E-02	293.0	end
np-237	11	0.0	9.13701E-06	293.0	end
pu-238	11	0.0	2.52920E-06	293.0	end
pu-239	11	0.0	1.32580E-04	293.0	end
pu-240	11	0.0	4.25667E-05	293.0	end
pu-241	11	0.0	2.68115E-05	293.0	end
pu-242	11	0.0	7.40231E-06	293.0	end
am-241	11	0.0	6.82477E-07	293.0	end
am-243	11	0.0	1.12799E-06	293.0	end
o	11	0.0	4.58960E-02	293.0	end
mo-95	12	0.0	3.63734E-05	293.0	end
tc-99	12	0.0	4.24647E-05	293.0	end
ru-101	12	0.0	4.04227E-05	293.0	end
rh-103	12	0.0	2.13720E-05	293.0	end
ag-109	12	0.0	2.92939E-06	293.0	end
cs-133	12	0.0	4.39058E-05	293.0	end
nd-143	12	0.0	3.15532E-05	293.0	end
nd-145	12	0.0	2.54971E-05	293.0	end
sm-147	12	0.0	2.32256E-06	293.0	end
sm-149	12	0.0	1.03836E-07	293.0	end
sm-150	12	0.0	1.01227E-05	293.0	end
sm-151	12	0.0	5.27971E-07	293.0	end
sm-152	12	0.0	4.23447E-06	293.0	end
eu-153	12	0.0	3.74564E-06	293.0	end
gd-155	12	0.0	1.18433E-09	293.0	end
u-234	12	0.0	5.00751E-06	293.0	end
u-235	12	0.0	3.29615E-04	293.0	end
u-236	12	0.0	1.04069E-04	293.0	end
u-238	12	0.0	2.15407E-02	293.0	end

am-243	9	0.0	5.62282E-06	293.0	end
o	9	0.0	4.58960E-02	293.0	end
mo-95	10	0.0	6.17218E-05	293.0	end
tc-99	10	0.0	6.65140E-05	293.0	end
ru-101	10	0.0	6.85447E-05	293.0	end
rh-103	10	0.0	3.22787E-05	293.0	end
ag-109	10	0.0	6.22720E-06	293.0	end
cs-133	10	0.0	6.68198E-05	293.0	end
nd-143	10	0.0	4.09220E-05	293.0	end
nd-145	10	0.0	3.88028E-05	293.0	end
sm-147	10	0.0	3.86531E-06	293.0	end
sm-149	10	0.0	9.02193E-08	293.0	end
sm-150	10	0.0	1.74200E-05	293.0	end
sm-151	10	0.0	6.39260E-07	293.0	end
sm-152	10	0.0	6.43806E-06	293.0	end
eu-153	10	0.0	7.60737E-06	293.0	end
gd-155	10	0.0	3.03756E-09	293.0	end
u-234	10	0.0	3.30897E-06	293.0	end
u-235	10	0.0	1.21581E-04	293.0	end
u-236	10	0.0	1.26415E-04	293.0	end
u-238	10	0.0	2.11161E-02	293.0	end
np-237	10	0.0	1.68507E-05	293.0	end
pu-238	10	0.0	8.55527E-06	293.0	end
pu-239	10	0.0	1.32328E-04	293.0	end
pu-240	10	0.0	6.27298E-05	293.0	end
pu-241	10	0.0	3.92710E-05	293.0	end
pu-242	10	0.0	2.37585E-05	293.0	end
am-241	10	0.0	1.22340E-06	293.0	end
am-243	10	0.0	5.41663E-06	293.0	end
o	10	0.0	4.58960E-02	293.0	end
mo-95	11	0.0	6.12090E-05	293.0	end
tc-99	11	0.0	6.60364E-05	293.0	end
ru-101	11	0.0	6.79243E-05	293.0	end
rh-103	11	0.0	3.20976E-05	293.0	end
ag-109	11	0.0	6.15292E-06	293.0	end
cs-133	11	0.0	6.63898E-05	293.0	end
nd-143	11	0.0	4.08269E-05	293.0	end
nd-145	11	0.0	3.85459E-05	293.0	end
sm-147	11	0.0	3.84357E-06	293.0	end
sm-149	11	0.0	9.05696E-08	293.0	end
sm-150	11	0.0	1.72731E-05	293.0	end
sm-151	11	0.0	6.37318E-07	293.0	end
sm-152	11	0.0	6.39579E-06	293.0	end
eu-153	11	0.0	7.52494E-06	293.0	end
gd-155	11	0.0	2.99063E-09	293.0	end
u-234	11	0.0	3.34231E-06	293.0	end
u-235	11	0.0	1.24735E-04	293.0	end
u-236	11	0.0	1.26254E-04	293.0	end
u-238	11	0.0	2.11266E-02	293.0	end
np-237	11	0.0	1.66955E-05	293.0	end
pu-238	11	0.0	8.39082E-06	293.0	end
pu-239	11	0.0	1.32485E-04	293.0	end
pu-240	11	0.0	6.24273E-05	293.0	end
pu-241	11	0.0	3.91285E-05	293.0	end
pu-242	11	0.0	2.33174E-05	293.0	end
am-241	11	0.0	1.21804E-06	293.0	end
am-243	11	0.0	5.28382E-06	293.0	end
o	11	0.0	4.58960E-02	293.0	end
mo-95	12	0.0	6.05774E-05	293.0	end
tc-99	12	0.0	6.54472E-05	293.0	end
ru-101	12	0.0	6.71636E-05	293.0	end
rh-103	12	0.0	3.18720E-05	293.0	end
ag-109	12	0.0	6.06172E-06	293.0	end
cs-133	12	0.0	6.58576E-05	293.0	end
nd-143	12	0.0	4.07041E-05	293.0	end
nd-145	12	0.0	3.82289E-05	293.0	end
sm-147	12	0.0	3.81610E-06	293.0	end
sm-149	12	0.0	9.10122E-08	293.0	end
sm-150	12	0.0	1.70919E-05	293.0	end
sm-151	12	0.0	6.34925E-07	293.0	end
sm-152	12	0.0	6.34352E-06	293.0	end
eu-153	12	0.0	7.42345E-06	293.0	end
gd-155	12	0.0	2.93373E-09	293.0	end
u-234	12	0.0	3.38349E-06	293.0	end
u-235	12	0.0	1.28685E-04	293.0	end
u-236	12	0.0	1.26040E-04	293.0	end
u-238	12	0.0	2.11393E-02	293.0	end

np-237	12	0.0	8.91104E-06	293.0	end
pu-238	12	0.0	2.41426E-06	293.0	end
pu-239	12	0.0	1.32218E-04	293.0	end
pu-240	12	0.0	4.18236E-05	293.0	end
pu-241	12	0.0	2.62856E-05	293.0	end
pu-242	12	0.0	7.07391E-06	293.0	end
am-241	12	0.0	6.61056E-07	293.0	end
am-243	12	0.0	1.05840E-06	293.0	end
o	12	0.0	4.58960E-02	293.0	end
mo-95	13	0.0	3.56166E-05	293.0	end
tc-99	13	0.0	4.17389E-05	293.0	end
ru-101	13	0.0	3.96526E-05	293.0	end
rh-103	13	0.0	2.09998E-05	293.0	end
ag-109	13	0.0	2.84526E-06	293.0	end
cs-133	13	0.0	4.31827E-05	293.0	end
nd-143	13	0.0	3.11452E-05	293.0	end
nd-145	13	0.0	2.50844E-05	293.0	end
sm-147	13	0.0	2.26709E-06	293.0	end
sm-149	13	0.0	1.04070E-07	293.0	end
sm-150	13	0.0	9.91201E-06	293.0	end
sm-151	13	0.0	5.24130E-07	293.0	end
sm-152	13	0.0	4.16521E-06	293.0	end
eu-153	13	0.0	3.64271E-06	293.0	end
gd-155	13	0.0	1.14474E-09	293.0	end
u-234	13	0.0	5.05879E-06	293.0	end
u-235	13	0.0	3.37337E-04	293.0	end
u-236	13	0.0	1.02977E-04	293.0	end
u-238	13	0.0	2.15511E-02	293.0	end
np-237	13	0.0	8.67768E-06	293.0	end
pu-238	13	0.0	2.29860E-06	293.0	end
pu-239	13	0.0	1.31808E-04	293.0	end
pu-240	13	0.0	4.10458E-05	293.0	end
pu-241	13	0.0	2.57321E-05	293.0	end
pu-242	13	0.0	6.74198E-06	293.0	end
am-241	13	0.0	6.38790E-07	293.0	end
am-243	13	0.0	9.89299E-07	293.0	end
o	13	0.0	4.58960E-02	293.0	end
mo-95	14	0.0	3.44576E-05	293.0	end
tc-99	14	0.0	4.06272E-05	293.0	end
ru-101	14	0.0	3.84781E-05	293.0	end
rh-103	14	0.0	2.04246E-05	293.0	end
ag-109	14	0.0	2.71820E-06	293.0	end
cs-133	14	0.0	4.20714E-05	293.0	end
nd-143	14	0.0	3.05087E-05	293.0	end
nd-145	14	0.0	2.44504E-05	293.0	end
sm-147	14	0.0	2.18173E-06	293.0	end
sm-149	14	0.0	1.04399E-07	293.0	end
sm-150	14	0.0	9.59030E-06	293.0	end
sm-151	14	0.0	5.18167E-07	293.0	end
sm-152	14	0.0	4.05863E-06	293.0	end
eu-153	14	0.0	3.48682E-06	293.0	end
gd-155	14	0.0	1.08567E-09	293.0	end
u-234	14	0.0	5.13750E-06	293.0	end
u-235	14	0.0	3.49325E-04	293.0	end
u-236	14	0.0	1.01275E-04	293.0	end
u-238	14	0.0	2.15669E-02	293.0	end
np-237	14	0.0	8.32254E-06	293.0	end
pu-238	14	0.0	2.12847E-06	293.0	end
pu-239	14	0.0	1.31120E-04	293.0	end
pu-240	14	0.0	3.98435E-05	293.0	end
pu-241	14	0.0	2.48695E-05	293.0	end
pu-242	14	0.0	6.25093E-06	293.0	end
am-241	14	0.0	6.04673E-07	293.0	end
am-243	14	0.0	8.89528E-07	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	3.26208E-05	293.0	end
tc-99	15	0.0	3.88633E-05	293.0	end
ru-101	15	0.0	3.66334E-05	293.0	end
rh-103	15	0.0	1.95056E-05	293.0	end
ag-109	15	0.0	2.52149E-06	293.0	end
cs-133	15	0.0	4.03024E-05	293.0	end
nd-143	15	0.0	2.94693E-05	293.0	end
nd-145	15	0.0	2.34409E-05	293.0	end
sm-147	15	0.0	2.04581E-06	293.0	end
sm-149	15	0.0	1.04818E-07	293.0	end
sm-150	15	0.0	9.08430E-06	293.0	end
sm-151	15	0.0	5.08550E-07	293.0	end

np-237	12	0.0	1.65004E-05	293.0	end
pu-238	12	0.0	8.19019E-06	293.0	end
pu-239	12	0.0	1.32679E-04	293.0	end
pu-240	12	0.0	6.20454E-05	293.0	end
pu-241	12	0.0	3.89470E-05	293.0	end
pu-242	12	0.0	2.27791E-05	293.0	end
am-241	12	0.0	1.21104E-06	293.0	end
am-243	12	0.0	5.12320E-06	293.0	end
o	12	0.0	4.58960E-02	293.0	end
mo-95	13	0.0	5.97211E-05	293.0	end
tc-99	13	0.0	6.46473E-05	293.0	end
ru-101	13	0.0	6.61380E-05	293.0	end
rh-103	13	0.0	3.15615E-05	293.0	end
ag-109	13	0.0	5.93872E-06	293.0	end
cs-133	13	0.0	6.51320E-05	293.0	end
nd-143	13	0.0	4.05272E-05	293.0	end
nd-145	13	0.0	3.77977E-05	293.0	end
sm-147	13	0.0	3.77769E-06	293.0	end
sm-149	13	0.0	9.15705E-08	293.0	end
sm-150	13	0.0	1.68457E-05	293.0	end
sm-151	13	0.0	6.31557E-07	293.0	end
sm-152	13	0.0	6.27260E-06	293.0	end
eu-153	13	0.0	7.28585E-06	293.0	end
gd-155	13	0.0	2.85644E-09	293.0	end
u-234	13	0.0	3.43952E-06	293.0	end
u-235	13	0.0	1.34152E-04	293.0	end
u-236	13	0.0	1.25719E-04	293.0	end
u-238	13	0.0	2.11563E-02	293.0	end
np-237	13	0.0	1.62400E-05	293.0	end
pu-238	13	0.0	7.92157E-06	293.0	end
pu-239	13	0.0	1.32930E-04	293.0	end
pu-240	13	0.0	6.15186E-05	293.0	end
pu-241	13	0.0	3.86844E-05	293.0	end
pu-242	13	0.0	2.20594E-05	293.0	end
am-241	13	0.0	1.20082E-06	293.0	end
am-243	13	0.0	4.90995E-06	293.0	end
o	13	0.0	4.58960E-02	293.0	end
mo-95	14	0.0	5.83173E-05	293.0	end
tc-99	14	0.0	6.33341E-05	293.0	end
ru-101	14	0.0	6.44712E-05	293.0	end
rh-103	14	0.0	3.10423E-05	293.0	end
ag-109	14	0.0	5.73898E-06	293.0	end
cs-133	14	0.0	6.39341E-05	293.0	end
nd-143	14	0.0	4.02110E-05	293.0	end
nd-145	14	0.0	3.70878E-05	293.0	end
sm-147	14	0.0	3.71195E-06	293.0	end
sm-149	14	0.0	9.22134E-08	293.0	end
sm-150	14	0.0	1.64405E-05	293.0	end
sm-151	14	0.0	6.25396E-07	293.0	end
sm-152	14	0.0	6.15690E-06	293.0	end
eu-153	14	0.0	7.06000E-06	293.0	end
gd-155	14	0.0	2.72474E-09	293.0	end
u-234	14	0.0	3.53182E-06	293.0	end
u-235	14	0.0	1.43388E-04	293.0	end
u-236	14	0.0	1.25122E-04	293.0	end
u-238	14	0.0	2.11834E-02	293.0	end
np-237	14	0.0	1.58527E-05	293.0	end
pu-238	14	0.0	7.48969E-06	293.0	end
pu-239	14	0.0	1.33284E-04	293.0	end
pu-240	14	0.0	6.06508E-05	293.0	end
pu-241	14	0.0	3.81956E-05	293.0	end
pu-242	14	0.0	2.09077E-05	293.0	end
am-241	14	0.0	1.18227E-06	293.0	end
am-243	14	0.0	4.56963E-06	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	5.59766E-05	293.0	end
tc-99	15	0.0	6.11354E-05	293.0	end
ru-101	15	0.0	6.17305E-05	293.0	end
rh-103	15	0.0	3.01438E-05	293.0	end
ag-109	15	0.0	5.41006E-06	293.0	end
cs-133	15	0.0	6.19087E-05	293.0	end
nd-143	15	0.0	3.96147E-05	293.0	end
nd-145	15	0.0	3.58942E-05	293.0	end
sm-147	15	0.0	3.59443E-06	293.0	end
sm-149	15	0.0	9.35183E-08	293.0	end
sm-150	15	0.0	1.57616E-05	293.0	end
sm-151	15	0.0	6.15679E-07	293.0	end

sm-152	15	0.0	3.88868E-06	293.0	end	sm-152	15	0.0	5.96088E-06	293.0	end
eu-153	15	0.0	3.24470E-06	293.0	end	eu-153	15	0.0	6.68553E-06	293.0	end
gd-155	15	0.0	9.96413E-10	293.0	end	gd-155	15	0.0	2.51946E-09	293.0	end
u-234	15	0.0	5.26210E-06	293.0	end	u-234	15	0.0	3.68665E-06	293.0	end
u-235	15	0.0	3.68717E-04	293.0	end	u-235	15	0.0	1.59551E-04	293.0	end
u-236	15	0.0	9.84635E-05	293.0	end	u-236	15	0.0	1.23904E-04	293.0	end
u-238	15	0.0	2.15906E-02	293.0	end	u-238	15	0.0	2.12279E-02	293.0	end
np-237	15	0.0	7.76651E-06	293.0	end	np-237	15	0.0	1.51594E-05	293.0	end
pu-238	15	0.0	1.87619E-06	293.0	end	pu-238	15	0.0	6.79175E-06	293.0	end
pu-239	15	0.0	1.29853E-04	293.0	end	pu-239	15	0.0	1.33837E-04	293.0	end
pu-240	15	0.0	3.79097E-05	293.0	end	pu-240	15	0.0	5.90808E-05	293.0	end
pu-241	15	0.0	2.34701E-05	293.0	end	pu-241	15	0.0	3.73309E-05	293.0	end
pu-242	15	0.0	5.51600E-06	293.0	end	pu-242	15	0.0	1.90485E-05	293.0	end
am-241	15	0.0	5.50895E-07	293.0	end	am-241	15	0.0	1.14652E-06	293.0	end
am-243	15	0.0	7.45982E-07	293.0	end	am-243	15	0.0	4.03851E-06	293.0	end
o	15	0.0	4.58960E-02	293.0	end	o	15	0.0	4.58960E-02	293.0	end
mo-95	16	0.0	2.99195E-05	293.0	end	mo-95	16	0.0	5.23242E-05	293.0	end
tc-99	16	0.0	3.62688E-05	293.0	end	tc-99	16	0.0	5.76858E-05	293.0	end
ru-101	16	0.0	3.39560E-05	293.0	end	ru-101	16	0.0	5.75451E-05	293.0	end
rh-103	16	0.0	1.81361E-05	293.0	end	rh-103	16	0.0	2.86662E-05	293.0	end
ag-109	16	0.0	2.24298E-06	293.0	end	ag-109	16	0.0	4.90848E-06	293.0	end
cs-133	16	0.0	3.76852E-05	293.0	end	cs-133	16	0.0	5.86844E-05	293.0	end
nd-143	16	0.0	2.78782E-05	293.0	end	nd-143	16	0.0	3.85167E-05	293.0	end
nd-145	16	0.0	2.19504E-05	293.0	end	nd-145	16	0.0	3.40075E-05	293.0	end
sm-147	16	0.0	1.84561E-06	293.0	end	sm-147	16	0.0	3.39266E-06	293.0	end
sm-149	16	0.0	1.05235E-07	293.0	end	sm-149	16	0.0	9.58510E-08	293.0	end
sm-150	16	0.0	8.35010E-06	293.0	end	sm-150	16	0.0	1.46999E-05	293.0	end
sm-151	16	0.0	4.94038E-07	293.0	end	sm-151	16	0.0	6.00904E-07	293.0	end
sm-152	16	0.0	3.63625E-06	293.0	end	sm-152	16	0.0	5.64916E-06	293.0	end
eu-153	16	0.0	2.90044E-06	293.0	end	eu-153	16	0.0	6.10788E-06	293.0	end
gd-155	16	0.0	8.74616E-10	293.0	end	gd-155	16	0.0	2.22590E-09	293.0	end
u-234	16	0.0	5.44532E-06	293.0	end	u-234	16	0.0	3.93006E-06	293.0	end
u-235	16	0.0	3.98079E-04	293.0	end	u-235	16	0.0	1.86627E-04	293.0	end
u-236	16	0.0	9.41026E-05	293.0	end	u-236	16	0.0	1.21491E-04	293.0	end
u-238	16	0.0	2.16255E-02	293.0	end	u-238	16	0.0	2.12937E-02	293.0	end
np-237	16	0.0	6.96587E-06	293.0	end	np-237	16	0.0	1.40001E-05	293.0	end
pu-238	16	0.0	1.54255E-06	293.0	end	pu-238	16	0.0	5.77184E-06	293.0	end
pu-239	16	0.0	1.27582E-04	293.0	end	pu-239	16	0.0	1.34521E-04	293.0	end
pu-240	16	0.0	3.50137E-05	293.0	end	pu-240	16	0.0	5.63694E-05	293.0	end
pu-241	16	0.0	2.13511E-05	293.0	end	pu-241	16	0.0	3.58101E-05	293.0	end
pu-242	16	0.0	4.53056E-06	293.0	end	pu-242	16	0.0	1.63183E-05	293.0	end
am-241	16	0.0	4.73250E-07	293.0	end	am-241	16	0.0	1.07879E-06	293.0	end
am-243	16	0.0	5.65454E-07	293.0	end	am-243	16	0.0	3.29464E-06	293.0	end
o	16	0.0	4.58960E-02	293.0	end	o	16	0.0	4.58960E-02	293.0	end
mo-95	17	0.0	2.92630E-05	293.0	end	mo-95	17	0.0	5.09290E-05	293.0	end
tc-99	17	0.0	3.56726E-05	293.0	end	tc-99	17	0.0	5.63971E-05	293.0	end
ru-101	17	0.0	3.39805E-05	293.0	end	ru-101	17	0.0	5.72361E-05	293.0	end
rh-103	17	0.0	1.86627E-05	293.0	end	rh-103	17	0.0	2.99927E-05	293.0	end
ag-109	17	0.0	2.46676E-06	293.0	end	ag-109	17	0.0	5.12974E-06	293.0	end
cs-133	17	0.0	3.69003E-05	293.0	end	cs-133	17	0.0	5.70213E-05	293.0	end
nd-143	17	0.0	2.82133E-05	293.0	end	nd-143	17	0.0	4.12493E-05	293.0	end
nd-145	17	0.0	2.14914E-05	293.0	end	nd-145	17	0.0	3.32364E-05	293.0	end
sm-147	17	0.0	1.68059E-06	293.0	end	sm-147	17	0.0	2.99597E-06	293.0	end
sm-149	17	0.0	1.54781E-07	293.0	end	sm-149	17	0.0	1.62307E-07	293.0	end
sm-150	17	0.0	8.50893E-06	293.0	end	sm-150	17	0.0	1.48009E-05	293.0	end
sm-151	17	0.0	6.76677E-07	293.0	end	sm-151	17	0.0	9.26712E-07	293.0	end
sm-152	17	0.0	3.46028E-06	293.0	end	sm-152	17	0.0	5.30372E-06	293.0	end
eu-153	17	0.0	3.07522E-06	293.0	end	eu-153	17	0.0	6.22674E-06	293.0	end
gd-155	17	0.0	1.48630E-09	293.0	end	gd-155	17	0.0	4.33744E-09	293.0	end
u-234	17	0.0	5.14101E-06	293.0	end	u-234	17	0.0	3.65669E-06	293.0	end
u-235	17	0.0	4.29922E-04	293.0	end	u-235	17	0.0	2.39857E-04	293.0	end
u-236	17	0.0	9.44464E-05	293.0	end	u-236	17	0.0	1.19951E-04	293.0	end
u-238	17	0.0	2.15333E-02	293.0	end	u-238	17	0.0	2.11489E-02	293.0	end
np-237	17	0.0	8.74397E-06	293.0	end	np-237	17	0.0	1.70778E-05	293.0	end
pu-238	17	0.0	2.13179E-06	293.0	end	pu-238	17	0.0	7.61244E-06	293.0	end
pu-239	17	0.0	1.76977E-04	293.0	end	pu-239	17	0.0	2.05961E-04	293.0	end
pu-240	17	0.0	3.93257E-05	293.0	end	pu-240	17	0.0	6.40563E-05	293.0	end
pu-241	17	0.0	2.74606E-05	293.0	end	pu-241	17	0.0	4.88499E-05	293.0	end
pu-242	17	0.0	4.84553E-06	293.0	end	pu-242	17	0.0	1.56865E-05	293.0	end
am-241	17	0.0	6.25484E-07	293.0	end	am-241	17	0.0	1.60170E-06	293.0	end
am-243	17	0.0	7.42792E-07	293.0	end	am-243	17	0.0	3.70170E-06	293.0	end
o	17	0.0	4.58960E-02	293.0	end	o	17	0.0	4.58960E-02	293.0	end
mo-95	18	0.0	2.49846E-05	293.0	end	mo-95	18	0.0	4.53387E-05	293.0	end
tc-99	18	0.0	3.15498E-05	293.0	end	tc-99	18	0.0	5.10893E-05	293.0	end
ru-101	18	0.0	2.97112E-05	293.0	end	ru-101	18	0.0	5.09628E-05	293.0	end
rh-103	18	0.0	1.62961E-05	293.0	end	rh-103	18	0.0	2.72065E-05	293.0	end
ag-109	18	0.0	2.01934E-06	293.0	end	ag-109	18	0.0	4.38946E-06	293.0	end

```
cs-133   18  0.0  3.27452E-05  293.0  end
nd-143   18  0.0  2.52787E-05  293.0  end
nd-145   18  0.0  1.91118E-05  293.0  end
sm-147   18  0.0  1.39790E-06  293.0  end
sm-149   18  0.0  1.51262E-07  293.0  end
sm-150   18  0.0  7.32690E-06  293.0  end
sm-151   18  0.0  6.27006E-07  293.0  end
sm-152   18  0.0  3.07161E-06  293.0  end
eu-153   18  0.0  2.53023E-06  293.0  end
gd-155   18  0.0  1.15135E-09  293.0  end
u-234    18  0.0  5.45399E-06  293.0  end
u-235    18  0.0  4.75122E-04  293.0  end
u-236    18  0.0  8.71458E-05  293.0  end
u-238    18  0.0  2.15984E-02  293.0  end
np-237   18  0.0  7.21537E-06  293.0  end
pu-238   18  0.0  1.51896E-06  293.0  end
pu-239   18  0.0  1.67460E-04  293.0  end
pu-240   18  0.0  3.39682E-05  293.0  end
pu-241   18  0.0  2.28112E-05  293.0  end
pu-242   18  0.0  3.46675E-06  293.0  end
am-241   18  0.0  4.63818E-07  293.0  end
am-243   18  0.0  4.63625E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  1.73104E-05  293.0  end
tc-99    19  0.0  2.41222E-05  293.0  end
ru-101   19  0.0  2.22734E-05  293.0  end
rh-103   19  0.0  1.19898E-05  293.0  end
ag-109   19  0.0  1.29862E-06  293.0  end
cs-133   19  0.0  2.51558E-05  293.0  end
nd-143   19  0.0  1.97172E-05  293.0  end
nd-145   19  0.0  1.47806E-05  293.0  end
sm-147   19  0.0  9.06763E-07  293.0  end
sm-149   19  0.0  1.42348E-07  293.0  end
sm-150   19  0.0  5.28886E-06  293.0  end
sm-151   19  0.0  5.37314E-07  293.0  end
sm-152   19  0.0  2.34710E-06  293.0  end
eu-153   19  0.0  1.64874E-06  293.0  end
gd-155   19  0.0  7.01769E-10  293.0  end
u-234    19  0.0  6.02958E-06  293.0  end
u-235    19  0.0  5.63255E-04  293.0  end
u-236    19  0.0  7.20874E-05  293.0  end
u-238    19  0.0  2.17085E-02  293.0  end
np-237   19  0.0  4.70199E-06  293.0  end
pu-238   19  0.0  7.31742E-07  293.0  end
pu-239   19  0.0  1.45650E-04  293.0  end
pu-240   19  0.0  2.42397E-05  293.0  end
pu-241   19  0.0  1.46019E-05  293.0  end
pu-242   19  0.0  1.61382E-06  293.0  end
am-241   19  0.0  2.28391E-07  293.0  end
am-243   19  0.0  1.58691E-07  293.0  end
o        19  0.0  4.58960E-02  293.0  end
mo-95    20  0.0  3.60489E-06  293.0  end
tc-99    20  0.0  9.62205E-06  293.0  end
ru-101   20  0.0  8.62330E-06  293.0  end
rh-103   20  0.0  3.72052E-06  293.0  end
ag-109   20  0.0  2.80964E-07  293.0  end
cs-133   20  0.0  1.00124E-05  293.0  end
nd-143   20  0.0  7.82217E-06  293.0  end
nd-145   20  0.0  6.11608E-06  293.0  end
sm-147   20  0.0  1.66025E-07  293.0  end
sm-149   20  0.0  1.12591E-07  293.0  end
sm-150   20  0.0  1.77893E-06  293.0  end
sm-151   20  0.0  3.39708E-07  293.0  end
sm-152   20  0.0  8.48281E-07  293.0  end
eu-153   20  0.0  4.06906E-07  293.0  end
gd-155   20  0.0  2.38783E-10  293.0  end
u-234    20  0.0  7.18904E-06  293.0  end
u-235    20  0.0  7.63846E-04  293.0  end
u-236    20  0.0  3.50434E-05  293.0  end
u-238    20  0.0  2.18987E-02  293.0  end
np-237   20  0.0  1.12639E-06  293.0  end
pu-238   20  0.0  6.67749E-08  293.0  end
pu-239   20  0.0  7.78525E-05  293.0  end
pu-240   20  0.0  6.56349E-06  293.0  end
pu-241   20  0.0  2.16806E-06  293.0  end
pu-242   20  0.0  8.57529E-08  293.0  end
am-241   20  0.0  1.30160E-08  293.0  end
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cs-133   18  0.0  5.20060E-05  293.0  end
nd-143   18  0.0  3.81946E-05  293.0  end
nd-145   18  0.0  3.02590E-05  293.0  end
sm-147   18  0.0  2.69260E-06  293.0  end
sm-149   18  0.0  1.61536E-07  293.0  end
sm-150   18  0.0  1.31508E-05  293.0  end
sm-151   18  0.0  8.62618E-07  293.0  end
sm-152   18  0.0  4.84635E-06  293.0  end
eu-153   18  0.0  5.37101E-06  293.0  end
gd-155   18  0.0  3.39934E-09  293.0  end
u-234    18  0.0  4.02008E-06  293.0  end
u-235    18  0.0  2.82758E-04  293.0  end
u-236    18  0.0  1.15231E-04  293.0  end
u-238    18  0.0  2.12574E-02  293.0  end
np-237   18  0.0  1.48982E-05  293.0  end
pu-238   18  0.0  5.78822E-06  293.0  end
pu-239   18  0.0  2.00871E-04  293.0  end
pu-240   18  0.0  5.82008E-05  293.0  end
pu-241   18  0.0  4.38693E-05  293.0  end
pu-242   18  0.0  1.22803E-05  293.0  end
am-241   18  0.0  1.34344E-06  293.0  end
am-243   18  0.0  2.68159E-06  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  3.42666E-05  293.0  end
tc-99    19  0.0  4.04857E-05  293.0  end
ru-101   19  0.0  3.91026E-05  293.0  end
rh-103   19  0.0  2.13892E-05  293.0  end
ag-109   19  0.0  3.02721E-06  293.0  end
cs-133   19  0.0  4.16939E-05  293.0  end
nd-143   19  0.0  3.15008E-05  293.0  end
nd-145   19  0.0  2.42500E-05  293.0  end
sm-147   19  0.0  2.00967E-06  293.0  end
sm-149   19  0.0  1.57841E-07  293.0  end
sm-150   19  0.0  9.92606E-06  293.0  end
sm-151   19  0.0  7.34702E-07  293.0  end
sm-152   19  0.0  3.90359E-06  293.0  end
eu-153   19  0.0  3.75341E-06  293.0  end
gd-155   19  0.0  1.96535E-09  293.0  end
u-234    19  0.0  4.78195E-06  293.0  end
u-235    19  0.0  3.80319E-04  293.0  end
u-236    19  0.0  1.02041E-04  293.0  end
u-238    19  0.0  2.14533E-02  293.0  end
np-237   19  0.0  1.06080E-05  293.0  end
pu-238   19  0.0  3.02951E-06  293.0  end
pu-239   19  0.0  1.86207E-04  293.0  end
pu-240   19  0.0  4.54577E-05  293.0  end
pu-241   19  0.0  3.28165E-05  293.0  end
pu-242   19  0.0  6.77733E-06  293.0  end
am-241   19  0.0  8.35494E-07  293.0  end
am-243   19  0.0  1.18983E-06  293.0  end
o        19  0.0  4.58960E-02  293.0  end
mo-95    20  0.0  1.07992E-05  293.0  end
tc-99    20  0.0  1.76762E-05  293.0  end
ru-101   20  0.0  1.60668E-05  293.0  end
rh-103   20  0.0  8.25125E-06  293.0  end
ag-109   20  0.0  7.75062E-07  293.0  end
cs-133   20  0.0  1.84718E-05  293.0  end
nd-143   20  0.0  1.46035E-05  293.0  end
nd-145   20  0.0  1.09672E-05  293.0  end
sm-147   20  0.0  5.27112E-07  293.0  end
sm-149   20  0.0  1.31370E-07  293.0  end
sm-150   20  0.0  3.63945E-06  293.0  end
sm-151   20  0.0  4.57408E-07  293.0  end
sm-152   20  0.0  1.69108E-06  293.0  end
eu-153   20  0.0  1.00906E-06  293.0  end
gd-155   20  0.0  4.44172E-10  293.0  end
u-234    20  0.0  6.53976E-06  293.0  end
u-235    20  0.0  6.47341E-04  293.0  end
u-236    20  0.0  5.69246E-05  293.0  end
u-238    20  0.0  2.17965E-02  293.0  end
np-237   20  0.0  2.86069E-06  293.0  end
pu-238   20  0.0  3.20752E-07  293.0  end
pu-239   20  0.0  1.20509E-04  293.0  end
pu-240   20  0.0  1.59776E-05  293.0  end
pu-241   20  0.0  8.15522E-06  293.0  end
pu-242   20  0.0  6.30115E-07  293.0  end
am-241   20  0.0  9.26971E-08  293.0  end
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 am-243   20  0.0  2.92719E-09  293.0  end
 o        20  0.0  4.58960E-02  293.0  end
ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ
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EOF ed24_f01_id03657_b30.mip

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 am-243   20  0.0  4.31533E-08  293.0  end
 o        20  0.0  4.58960E-02  293.0  end
ÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ
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EOF ed24_f01_id03657_b50.mip

File ed24_f01_id04180_b30.mip

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 mo-95     1  0.0  4.67069E-06  293.0  end
 tc-99     1  0.0  1.09863E-05  293.0  end
 ru-101    1  0.0  9.76043E-06  293.0  end
 rh-103    1  0.0  4.33782E-06  293.0  end
 ag-109    1  0.0  2.96840E-07  293.0  end
 cs-133    1  0.0  1.14667E-05  293.0  end
 nd-143    1  0.0  9.00927E-06  293.0  end
 nd-145    1  0.0  6.97408E-06  293.0  end
 sm-147    1  0.0  2.19762E-07  293.0  end
 sm-149    1  0.0  9.14633E-08  293.0  end
 sm-150    1  0.0  2.03663E-06  293.0  end
 sm-151    1  0.0  3.17012E-07  293.0  end
 sm-152    1  0.0  1.00990E-06  293.0  end
 eu-153    1  0.0  4.53614E-07  293.0  end
 gd-155    1  0.0  2.04788E-10  293.0  end
 u-234     1  0.0  7.22023E-06  293.0  end
 u-235     1  0.0  7.38873E-04  293.0  end
 u-236     1  0.0  3.73654E-05  293.0  end
 u-238     1  0.0  2.19107E-02  293.0  end
 np-237    1  0.0  1.05409E-06  293.0  end
 pu-238    1  0.0  6.33352E-08  293.0  end
 pu-239    1  0.0  6.66489E-05  293.0  end
 pu-240    1  0.0  6.76284E-06  293.0  end
 pu-241    1  0.0  2.13231E-06  293.0  end
 pu-242    1  0.0  1.00259E-07  293.0  end
 am-241    1  0.0  1.44253E-08  293.0  end
 am-243    1  0.0  3.04791E-09  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  2.12313E-05  293.0  end
 tc-99     2  0.0  2.79087E-05  293.0  end
 ru-101    2  0.0  2.55954E-05  293.0  end
 rh-103    2  0.0  1.36186E-05  293.0  end
 ag-109    2  0.0  1.43798E-06  293.0  end
 cs-133    2  0.0  2.91472E-05  293.0  end
 nd-143    2  0.0  2.22842E-05  293.0  end
 nd-145    2  0.0  1.70912E-05  293.0  end
 sm-147    2  0.0  1.21594E-06  293.0  end
 sm-149    2  0.0  1.04634E-07  293.0  end
 sm-150    2  0.0  6.07782E-06  293.0  end
 sm-151    2  0.0  4.44308E-07  293.0  end
 sm-152    2  0.0  2.80210E-06  293.0  end
 eu-153    2  0.0  1.89643E-06  293.0  end
 gd-155    2  0.0  5.57124E-10  293.0  end
 u-234     2  0.0  6.03439E-06  293.0  end
 u-235     2  0.0  4.99519E-04  293.0  end
 u-236     2  0.0  7.82335E-05  293.0  end
 u-238     2  0.0  2.17298E-02  293.0  end
 np-237    2  0.0  4.56568E-06  293.0  end
 pu-238    2  0.0  7.41492E-07  293.0  end
 pu-239    2  0.0  1.16328E-04  293.0  end
 pu-240    2  0.0  2.54122E-05  293.0  end
 pu-241    2  0.0  1.42574E-05  293.0  end
 pu-242    2  0.0  2.09726E-06  293.0  end
 am-241    2  0.0  2.49228E-07  293.0  end
 am-243    2  0.0  1.91755E-07  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
 mo-95     3  0.0  2.90427E-05  293.0  end
 tc-99     3  0.0  3.54266E-05  293.0  end
 ru-101    3  0.0  3.30957E-05  293.0  end
 rh-103    3  0.0  1.76880E-05  293.0  end
 ag-109    3  0.0  2.15539E-06  293.0  end
 cs-133    3  0.0  3.68325E-05  293.0  end
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File ed24_f01_id04180_b50.mip

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 lfd.Nr.:   2 aus sha_alf.mod


 mo-95     1  0.0  1.26482E-05  293.0  end
 tc-99     1  0.0  1.95368E-05  293.0  end
 ru-101    1  0.0  1.75918E-05  293.0  end
 rh-103    1  0.0  9.00247E-06  293.0  end
 ag-109    1  0.0  7.84850E-07  293.0  end
 cs-133    1  0.0  2.04575E-05  293.0  end
 nd-143    1  0.0  1.60256E-05  293.0  end
 nd-145    1  0.0  1.21365E-05  293.0  end
 sm-147    1  0.0  6.53922E-07  293.0  end
 sm-149    1  0.0  1.00426E-07  293.0  end
 sm-150    1  0.0  3.97195E-06  293.0  end
 sm-151    1  0.0  3.89219E-07  293.0  end
 sm-152    1  0.0  1.93048E-06  293.0  end
 eu-153    1  0.0  1.07424E-06  293.0  end
 gd-155    1  0.0  3.43221E-10  293.0  end
 u-234     1  0.0  6.62234E-06  293.0  end
 u-235     1  0.0  6.11882E-04  293.0  end
 u-236     1  0.0  5.95161E-05  293.0  end
 u-238     1  0.0  2.18235E-02  293.0  end
 np-237    1  0.0  2.56224E-06  293.0  end
 pu-238    1  0.0  2.82537E-07  293.0  end
 pu-239    1  0.0  9.73220E-05  293.0  end
 pu-240    1  0.0  1.57889E-05  293.0  end
 pu-241    1  0.0  7.44622E-06  293.0  end
 pu-242    1  0.0  6.91114E-07  293.0  end
 am-241    1  0.0  9.13615E-08  293.0  end
 am-243    1  0.0  4.11972E-08  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  3.98296E-05  293.0  end
 tc-99     2  0.0  4.57776E-05  293.0  end
 ru-101    2  0.0  4.39881E-05  293.0  end
 rh-103    2  0.0  2.30492E-05  293.0  end
 ag-109    2  0.0  3.32577E-06  293.0  end
 cs-133    2  0.0  4.71892E-05  293.0  end
 nd-143    2  0.0  3.33345E-05  293.0  end
 nd-145    2  0.0  2.73747E-05  293.0  end
 sm-147    2  0.0  2.57287E-06  293.0  end
 sm-149    2  0.0  1.02568E-07  293.0  end
 sm-150    2  0.0  1.10964E-05  293.0  end
 sm-151    2  0.0  5.45081E-07  293.0  end
 sm-152    2  0.0  4.54846E-06  293.0  end
 eu-153    2  0.0  4.22833E-06  293.0  end
 gd-155    2  0.0  1.37673E-09  293.0  end
 u-234     2  0.0  4.77306E-06  293.0  end
 u-235     2  0.0  2.95379E-04  293.0  end
 u-236     2  0.0  1.08742E-04  293.0  end
 u-238     2  0.0  2.14917E-02  293.0  end
 np-237    2  0.0  9.99246E-06  293.0  end
 pu-238    2  0.0  2.99116E-06  293.0  end
 pu-239    2  0.0  1.33676E-04  293.0  end
 pu-240    2  0.0  4.52922E-05  293.0  end
 pu-241    2  0.0  2.87132E-05  293.0  end
 pu-242    2  0.0  8.70806E-06  293.0  end
 am-241    2  0.0  7.61991E-07  293.0  end
 am-243    2  0.0  1.41614E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
 mo-95     3  0.0  5.06994E-05  293.0  end
 tc-99     3  0.0  5.61459E-05  293.0  end
 ru-101    3  0.0  5.57179E-05  293.0  end
 rh-103    3  0.0  2.79821E-05  293.0  end
 ag-109    3  0.0  4.69054E-06  293.0  end
 cs-133    3  0.0  5.72281E-05  293.0  end
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nd-143    3  0.0  2.73465E-05  293.0  end
nd-145    3  0.0  2.14648E-05  293.0  end
sm-147    3  0.0  1.78074E-06  293.0  end
sm-149    3  0.0  1.05311E-07  293.0  end
sm-150    3  0.0  8.11454E-06  293.0  end
sm-151    3  0.0  4.89233E-07  293.0  end
sm-152    3  0.0  3.55372E-06  293.0  end
eu-153    3  0.0  2.79184E-06  293.0  end
gd-155    3  0.0  8.37506E-10  293.0  end
u-234     3  0.0  5.50475E-06  293.0  end
u-235     3  0.0  4.07826E-04  293.0  end
u-236     3  0.0  9.26287E-05  293.0  end
u-238     3  0.0  2.16368E-02  293.0  end
np-237    3  0.0  6.71084E-06  293.0  end
pu-238    3  0.0  1.44346E-06  293.0  end
pu-239    3  0.0  1.26732E-04  293.0  end
pu-240    3  0.0  3.40627E-05  293.0  end
pu-241    3  0.0  2.06501E-05  293.0  end
pu-242    3  0.0  4.23479E-06  293.0  end
am-241    3  0.0  4.48617E-07  293.0  end
am-243    3  0.0  5.14189E-07  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  3.66247E-05  293.0  end
tc-99     4  0.0  4.27056E-05  293.0  end
ru-101    4  0.0  4.06791E-05  293.0  end
rh-103    4  0.0  2.14951E-05  293.0  end
ag-109    4  0.0  2.95753E-06  293.0  end
cs-133    4  0.0  4.41455E-05  293.0  end
nd-143    4  0.0  3.16872E-05  293.0  end
nd-145    4  0.0  2.56340E-05  293.0  end
sm-147    4  0.0  2.34093E-06  293.0  end
sm-149    4  0.0  1.03755E-07  293.0  end
sm-150    4  0.0  1.01928E-05  293.0  end
sm-151    4  0.0  5.29238E-07  293.0  end
sm-152    4  0.0  4.25742E-06  293.0  end
eu-153    4  0.0  3.78002E-06  293.0  end
gd-155    4  0.0  1.19767E-09  293.0  end
u-234     4  0.0  4.99050E-06  293.0  end
u-235     4  0.0  3.27069E-04  293.0  end
u-236     4  0.0  1.04426E-04  293.0  end
u-238     4  0.0  2.15373E-02  293.0  end
np-237    4  0.0  8.98879E-06  293.0  end
pu-238    4  0.0  2.45348E-06  293.0  end
pu-239    4  0.0  1.32347E-04  293.0  end
pu-240    4  0.0  4.20805E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end
pu-239    5  0.0  1.33299E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end
pu-242    5  0.0  8.19047E-06  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end
```

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nd-143    3  0.0  3.79639E-05  293.0  end
nd-145    3  0.0  3.31608E-05  293.0  end
sm-147    3  0.0  3.29644E-06  293.0  end
sm-149    3  0.0  9.68565E-08  293.0  end
sm-150    3  0.0  1.42273E-05  293.0  end
sm-151    3  0.0  5.94146E-07  293.0  end
sm-152    3  0.0  5.50897E-06  293.0  end
eu-153    3  0.0  5.85408E-06  293.0  end
gd-155    3  0.0  2.10197E-09  293.0  end
u-234     3  0.0  4.03888E-06  293.0  end
u-235     3  0.0  1.99381E-04  293.0  end
u-236     3  0.0  1.20224E-04  293.0  end
u-238     3  0.0  2.13218E-02  293.0  end
np-237    3  0.0  1.34780E-05  293.0  end
pu-238    3  0.0  5.34761E-06  293.0  end
pu-239    3  0.0  1.34721E-04  293.0  end
pu-240    3  0.0  5.50798E-05  293.0  end
pu-241    3  0.0  3.50511E-05  293.0  end
pu-242    3  0.0  1.51762E-05  293.0  end
am-241    3  0.0  1.04439E-06  293.0  end
am-243    3  0.0  2.99423E-06  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  5.96712E-05  293.0  end
tc-99     4  0.0  6.46007E-05  293.0  end
ru-101    4  0.0  6.60785E-05  293.0  end
rh-103    4  0.0  3.15433E-05  293.0  end
ag-109    4  0.0  5.93158E-06  293.0  end
cs-133    4  0.0  6.50896E-05  293.0  end
nd-143    4  0.0  4.05165E-05  293.0  end
nd-145    4  0.0  3.77725E-05  293.0  end
sm-147    4  0.0  3.77541E-06  293.0  end
sm-149    4  0.0  9.15997E-08  293.0  end
sm-150    4  0.0  1.68313E-05  293.0  end
sm-151    4  0.0  6.31352E-07  293.0  end
sm-152    4  0.0  6.26848E-06  293.0  end
eu-153    4  0.0  7.27784E-06  293.0  end
gd-155    4  0.0  2.85189E-09  293.0  end
u-234     4  0.0  3.44279E-06  293.0  end
u-235     4  0.0  1.34474E-04  293.0  end
u-236     4  0.0  1.25700E-04  293.0  end
u-238     4  0.0  2.11573E-02  293.0  end
np-237    4  0.0  1.62253E-05  293.0  end
pu-238    4  0.0  7.90604E-06  293.0  end
pu-239    4  0.0  1.32944E-04  293.0  end
pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  8.76042E-06  293.0  end
pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  3.94419E-05  293.0  end
pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  5.58383E-06  293.0  end
```

```
o          5  0.0  4.58960E-02  293.0  end
mo-95      6  0.0  3.99245E-05  293.0  end
tc-99      6  0.0  4.58684E-05  293.0  end
ru-101     6  0.0  4.40871E-05  293.0  end
rh-103     6  0.0  2.30946E-05  293.0  end
ag-109     6  0.0  3.33693E-06  293.0  end
cs-133     6  0.0  4.72788E-05  293.0  end
nd-143     6  0.0  3.33814E-05  293.0  end
nd-145     6  0.0  2.74260E-05  293.0  end
sm-147     6  0.0  2.57964E-06  293.0  end
sm-149     6  0.0  1.02528E-07  293.0  end
sm-150     6  0.0  1.11233E-05  293.0  end
sm-151     6  0.0  5.45540E-07  293.0  end
sm-152     6  0.0  4.55702E-06  293.0  end
eu-153     6  0.0  4.24185E-06  293.0  end
gd-155     6  0.0  1.38227E-09  293.0  end
u-234      6  0.0  4.76663E-06  293.0  end
u-235      6  0.0  2.94463E-04  293.0  end
u-236      6  0.0  1.08863E-04  293.0  end
u-238      6  0.0  2.14903E-02  293.0  end
np-237     6  0.0  1.00225E-05  293.0  end
pu-238     6  0.0  3.00813E-06  293.0  end
pu-239     6  0.0  1.33708E-04  293.0  end
pu-240     6  0.0  4.53853E-05  293.0  end
pu-241     6  0.0  2.87773E-05  293.0  end
pu-242     6  0.0  8.75567E-06  293.0  end
am-241     6  0.0  7.64727E-07  293.0  end
am-243     6  0.0  1.42697E-06  293.0  end
o          6  0.0  4.58960E-02  293.0  end
mo-95      7  0.0  4.03020E-05  293.0  end
tc-99      7  0.0  4.62299E-05  293.0  end
ru-101     7  0.0  4.44816E-05  293.0  end
rh-103     7  0.0  2.32748E-05  293.0  end
ag-109     7  0.0  3.38145E-06  293.0  end
cs-133     7  0.0  4.76350E-05  293.0  end
nd-143     7  0.0  3.35671E-05  293.0  end
nd-145     7  0.0  2.76300E-05  293.0  end
sm-147     7  0.0  2.60653E-06  293.0  end
sm-149     7  0.0  1.02369E-07  293.0  end
sm-150     7  0.0  1.12305E-05  293.0  end
sm-151     7  0.0  5.47362E-07  293.0  end
sm-152     7  0.0  4.59108E-06  293.0  end
eu-153     7  0.0  4.29579E-06  293.0  end
gd-155     7  0.0  1.40447E-09  293.0  end
u-234      7  0.0  4.74102E-06  293.0  end
u-235      7  0.0  2.90831E-04  293.0  end
u-236      7  0.0  1.09344E-04  293.0  end
u-238      7  0.0  2.14850E-02  293.0  end
np-237     7  0.0  1.01420E-05  293.0  end
pu-238     7  0.0  3.07627E-06  293.0  end
pu-239     7  0.0  1.33828E-04  293.0  end
pu-240     7  0.0  4.57545E-05  293.0  end
pu-241     7  0.0  2.90311E-05  293.0  end
pu-242     7  0.0  8.94661E-06  293.0  end
am-241     7  0.0  7.75585E-07  293.0  end
am-243     7  0.0  1.47055E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.95792E-05  293.0  end
tc-99      8  0.0  4.55378E-05  293.0  end
ru-101     8  0.0  4.37271E-05  293.0  end
rh-103     8  0.0  2.29293E-05  293.0  end
ag-109     8  0.0  3.29641E-06  293.0  end
cs-133     8  0.0  4.69526E-05  293.0  end
nd-143     8  0.0  3.32102E-05  293.0  end
nd-145     8  0.0  2.72393E-05  293.0  end
sm-147     8  0.0  2.55497E-06  293.0  end
sm-149     8  0.0  1.02671E-07  293.0  end
sm-150     8  0.0  1.10254E-05  293.0  end
sm-151     8  0.0  5.43866E-07  293.0  end
sm-152     8  0.0  4.52584E-06  293.0  end
eu-153     8  0.0  4.19271E-06  293.0  end
gd-155     8  0.0  1.36216E-09  293.0  end
u-234      8  0.0  4.79005E-06  293.0  end
u-235      8  0.0  2.97803E-04  293.0  end
u-236      8  0.0  1.08419E-04  293.0  end
u-238      8  0.0  2.14952E-02  293.0  end
np-237     8  0.0  9.91337E-06  293.0  end
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```
o          5  0.0  4.58960E-02  293.0  end
mo-95      6  0.0  6.36571E-05  293.0  end
tc-99      6  0.0  6.83111E-05  293.0  end
ru-101     6  0.0  7.09080E-05  293.0  end
rh-103     6  0.0  3.29433E-05  293.0  end
ag-109     6  0.0  6.50953E-06  293.0  end
cs-133     6  0.0  6.84264E-05  293.0  end
nd-143     6  0.0  4.12433E-05  293.0  end
nd-145     6  0.0  3.97662E-05  293.0  end
sm-147     6  0.0  3.94272E-06  293.0  end
sm-149     6  0.0  8.89642E-08  293.0  end
sm-150     6  0.0  1.79721E-05  293.0  end
sm-151     6  0.0  6.46598E-07  293.0  end
sm-152     6  0.0  6.59633E-06  293.0  end
eu-153     6  0.0  7.91861E-06  293.0  end
gd-155     6  0.0  3.22016E-09  293.0  end
u-234      6  0.0  3.18388E-06  293.0  end
u-235      6  0.0  1.10104E-04  293.0  end
u-236      6  0.0  1.26903E-04  293.0  end
u-238      6  0.0  2.10755E-02  293.0  end
np-237     6  0.0  1.74145E-05  293.0  end
pu-238     6  0.0  9.18775E-06  293.0  end
pu-239     6  0.0  1.31720E-04  293.0  end
pu-240     6  0.0  6.38149E-05  293.0  end
pu-241     6  0.0  3.97716E-05  293.0  end
pu-242     6  0.0  2.54552E-05  293.0  end
am-241     6  0.0  1.24098E-06  293.0  end
am-243     6  0.0  5.93717E-06  293.0  end
o          6  0.0  4.58960E-02  293.0  end
mo-95      7  0.0  6.41949E-05  293.0  end
tc-99      7  0.0  6.88092E-05  293.0  end
ru-101     7  0.0  7.15712E-05  293.0  end
rh-103     7  0.0  3.31227E-05  293.0  end
ag-109     7  0.0  6.58854E-06  293.0  end
cs-133     7  0.0  6.88684E-05  293.0  end
nd-143     7  0.0  4.13220E-05  293.0  end
nd-145     7  0.0  4.00320E-05  293.0  end
sm-147     7  0.0  3.96292E-06  293.0  end
sm-149     7  0.0  8.86158E-08  293.0  end
sm-150     7  0.0  1.81246E-05  293.0  end
sm-151     7  0.0  6.48610E-07  293.0  end
sm-152     7  0.0  6.64004E-06  293.0  end
eu-153     7  0.0  8.00504E-06  293.0  end
gd-155     7  0.0  3.27190E-09  293.0  end
u-234      7  0.0  3.14936E-06  293.0  end
u-235      7  0.0  1.07033E-04  293.0  end
u-236      7  0.0  1.27003E-04  293.0  end
u-238      7  0.0  2.10638E-02  293.0  end
np-237     7  0.0  1.75686E-05  293.0  end
pu-238     7  0.0  9.36658E-06  293.0  end
pu-239     7  0.0  1.31543E-04  293.0  end
pu-240     7  0.0  6.41029E-05  293.0  end
pu-241     7  0.0  3.98988E-05  293.0  end
pu-242     7  0.0  2.59358E-05  293.0  end
am-241     7  0.0  1.24514E-06  293.0  end
am-243     7  0.0  6.08700E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.35416E-05  293.0  end
tc-99      8  0.0  6.82041E-05  293.0  end
ru-101     8  0.0  7.07660E-05  293.0  end
rh-103     8  0.0  3.29044E-05  293.0  end
ag-109     8  0.0  6.49260E-06  293.0  end
cs-133     8  0.0  6.83313E-05  293.0  end
nd-143     8  0.0  4.12258E-05  293.0  end
nd-145     8  0.0  3.97090E-05  293.0  end
sm-147     8  0.0  3.93831E-06  293.0  end
sm-149     8  0.0  8.90389E-08  293.0  end
sm-150     8  0.0  1.79393E-05  293.0  end
sm-151     8  0.0  6.46165E-07  293.0  end
sm-152     8  0.0  6.58693E-06  293.0  end
eu-153     8  0.0  7.90004E-06  293.0  end
gd-155     8  0.0  3.20910E-09  293.0  end
u-234      8  0.0  3.19131E-06  293.0  end
u-235      8  0.0  1.10770E-04  293.0  end
u-236      8  0.0  1.26880E-04  293.0  end
u-238      8  0.0  2.10779E-02  293.0  end
np-237     8  0.0  1.73813E-05  293.0  end
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```
pu-238     8  0.0  2.94667E-06  293.0  end
pu-239     8  0.0  1.33592E-04  293.0  end
pu-240     8  0.0  4.50459E-05  293.0  end
pu-241     8  0.0  2.85432E-05  293.0  end
pu-242     8  0.0  8.58315E-06  293.0  end
am-241     8  0.0  7.54760E-07  293.0  end
am-243     8  0.0  1.38782E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  3.85161E-05  293.0  end
tc-99      9  0.0  4.45193E-05  293.0  end
ru-101     9  0.0  4.26241E-05  293.0  end
rh-103     9  0.0  2.24167E-05  293.0  end
ag-109     9  0.0  3.17286E-06  293.0  end
cs-133     9  0.0  4.59459E-05  293.0  end
nd-143     9  0.0  3.26739E-05  293.0  end
nd-145     9  0.0  2.66628E-05  293.0  end
sm-147     9  0.0  2.47847E-06  293.0  end
sm-149     9  0.0  1.03087E-07  293.0  end
sm-150     9  0.0  1.07246E-05  293.0  end
sm-151     9  0.0  5.38669E-07  293.0  end
sm-152     9  0.0  4.42961E-06  293.0  end
eu-153     9  0.0  4.04254E-06  293.0  end
gd-155     9  0.0  1.30144E-09  293.0  end
u-234      9  0.0  4.86219E-06  293.0  end
u-235      9  0.0  3.08189E-04  293.0  end
u-236      9  0.0  1.07020E-04  293.0  end
u-238      9  0.0  2.15106E-02  293.0  end
np-237     9  0.0  9.57877E-06  293.0  end
pu-238     9  0.0  2.76242E-06  293.0  end
pu-239     9  0.0  1.33196E-04  293.0  end
pu-240     9  0.0  4.39911E-05  293.0  end
pu-241     9  0.0  2.78109E-05  293.0  end
pu-242     9  0.0  8.06416E-06  293.0  end
am-241     9  0.0  7.23880E-07  293.0  end
am-243     9  0.0  1.27181E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  3.77225E-05  293.0  end
tc-99     10  0.0  4.37585E-05  293.0  end
ru-101    10  0.0  4.18054E-05  293.0  end
rh-103    10  0.0  2.20313E-05  293.0  end
ag-109    10  0.0  3.08180E-06  293.0  end
cs-133    10  0.0  4.51918E-05  293.0  end
nd-143    10  0.0  3.22648E-05  293.0  end
nd-145    10  0.0  2.62314E-05  293.0  end
sm-147    10  0.0  2.42095E-06  293.0  end
sm-149    10  0.0  1.03377E-07  293.0  end
sm-150    10  0.0  1.05008E-05  293.0  end
sm-151    10  0.0  5.34741E-07  293.0  end
sm-152    10  0.0  4.35752E-06  293.0  end
eu-153    10  0.0  3.93163E-06  293.0  end
gd-155    10  0.0  1.25724E-09  293.0  end
u-234     10  0.0  4.91605E-06  293.0  end
u-235     10  0.0  3.16048E-04  293.0  end
u-236     10  0.0  1.05949E-04  293.0  end
u-238     10  0.0  2.15221E-02  293.0  end
np-237    10  0.0  9.33031E-06  293.0  end
pu-238    10  0.0  2.62984E-06  293.0  end
pu-239    10  0.0  1.32863E-04  293.0  end
pu-240    10  0.0  4.31944E-05  293.0  end
pu-241    10  0.0  2.72534E-05  293.0  end
pu-242    10  0.0  7.68866E-06  293.0  end
am-241    10  0.0  7.00676E-07  293.0  end
am-243    10  0.0  1.18964E-06  293.0  end
o         10  0.0  4.58960E-02  293.0  end
mo-95     11  0.0  3.71022E-05  293.0  end
tc-99     11  0.0  4.31635E-05  293.0  end
ru-101    11  0.0  4.11680E-05  293.0  end
rh-103    11  0.0  2.17288E-05  293.0  end
ag-109    11  0.0  3.01133E-06  293.0  end
cs-133    11  0.0  4.46009E-05  293.0  end
nd-143    11  0.0  3.19401E-05  293.0  end
nd-145    11  0.0  2.58940E-05  293.0  end
sm-147    11  0.0  2.37580E-06  293.0  end
sm-149    11  0.0  1.03595E-07  293.0  end
sm-150    11  0.0  1.03265E-05  293.0  end
sm-151    11  0.0  5.31640E-07  293.0  end
sm-152    11  0.0  4.30100E-06  293.0  end
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pu-238     8  0.0  9.14952E-06  293.0  end
pu-239     8  0.0  1.31758E-04  293.0  end
pu-240     8  0.0  6.37523E-05  293.0  end
pu-241     8  0.0  3.97436E-05  293.0  end
pu-242     8  0.0  2.53525E-05  293.0  end
am-241     8  0.0  1.24005E-06  293.0  end
am-243     8  0.0  5.90529E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  6.25017E-05  293.0  end
tc-99      9  0.0  6.72392E-05  293.0  end
ru-101     9  0.0  6.94929E-05  293.0  end
rh-103     9  0.0  3.25501E-05  293.0  end
ag-109     9  0.0  6.34060E-06  293.0  end
cs-133     9  0.0  6.74704E-05  293.0  end
nd-143     9  0.0  4.10587E-05  293.0  end
nd-145     9  0.0  3.91922E-05  293.0  end
sm-147     9  0.0  3.89739E-06  293.0  end
sm-149     9  0.0  8.97077E-08  293.0  end
sm-150     9  0.0  1.76431E-05  293.0  end
sm-151     9  0.0  6.42227E-07  293.0  end
sm-152     9  0.0  6.50205E-06  293.0  end
eu-153     9  0.0  7.73280E-06  293.0  end
gd-155     9  0.0  3.11030E-09  293.0  end
u-234      9  0.0  3.25841E-06  293.0  end
u-235      9  0.0  1.16875E-04  293.0  end
u-236      9  0.0  1.26635E-04  293.0  end
u-238      9  0.0  2.10999E-02  293.0  end
np-237     9  0.0  1.70808E-05  293.0  end
pu-238     9  0.0  8.80797E-06  293.0  end
pu-239     9  0.0  1.32088E-04  293.0  end
pu-240     9  0.0  6.31770E-05  293.0  end
pu-241     9  0.0  3.94804E-05  293.0  end
pu-242     9  0.0  2.44361E-05  293.0  end
am-241     9  0.0  1.23098E-06  293.0  end
am-243     9  0.0  5.62282E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  6.17218E-05  293.0  end
tc-99     10  0.0  6.65140E-05  293.0  end
ru-101    10  0.0  6.85447E-05  293.0  end
rh-103    10  0.0  3.22787E-05  293.0  end
ag-109    10  0.0  6.22720E-06  293.0  end
cs-133    10  0.0  6.68198E-05  293.0  end
nd-143    10  0.0  4.09220E-05  293.0  end
nd-145    10  0.0  3.88028E-05  293.0  end
sm-147    10  0.0  3.86531E-06  293.0  end
sm-149    10  0.0  9.02193E-08  293.0  end
sm-150    10  0.0  1.74200E-05  293.0  end
sm-151    10  0.0  6.39260E-07  293.0  end
sm-152    10  0.0  6.43806E-06  293.0  end
eu-153    10  0.0  7.60737E-06  293.0  end
gd-155    10  0.0  3.03756E-09  293.0  end
u-234     10  0.0  3.30897E-06  293.0  end
u-235     10  0.0  1.21581E-04  293.0  end
u-236     10  0.0  1.26415E-04  293.0  end
u-238     10  0.0  2.11161E-02  293.0  end
np-237    10  0.0  1.68507E-05  293.0  end
pu-238    10  0.0  8.55527E-06  293.0  end
pu-239    10  0.0  1.32328E-04  293.0  end
pu-240    10  0.0  6.27298E-05  293.0  end
pu-241    10  0.0  3.92710E-05  293.0  end
pu-242    10  0.0  2.37585E-05  293.0  end
am-241    10  0.0  1.22340E-06  293.0  end
am-243    10  0.0  5.41663E-06  293.0  end
o         10  0.0  4.58960E-02  293.0  end
mo-95     11  0.0  6.12090E-05  293.0  end
tc-99     11  0.0  6.60364E-05  293.0  end
ru-101    11  0.0  6.79243E-05  293.0  end
rh-103    11  0.0  3.20976E-05  293.0  end
ag-109    11  0.0  6.15292E-06  293.0  end
cs-133    11  0.0  6.63898E-05  293.0  end
nd-143    11  0.0  4.08269E-05  293.0  end
nd-145    11  0.0  3.85459E-05  293.0  end
sm-147    11  0.0  3.84357E-06  293.0  end
sm-149    11  0.0  9.05696E-08  293.0  end
sm-150    11  0.0  1.72731E-05  293.0  end
sm-151    11  0.0  6.37318E-07  293.0  end
sm-152    11  0.0  6.39579E-06  293.0  end
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eu-153    11  0.0  3.84571E-06  293.0  end
gd-155    11  0.0  1.22334E-09  293.0  end
u-234     11  0.0  4.95812E-06  293.0  end
u-235     11  0.0  3.22255E-04  293.0  end
u-236     11  0.0  1.05095E-04  293.0  end
u-238     11  0.0  2.15307E-02  293.0  end
np-237    11  0.0  9.13701E-06  293.0  end
pu-238    11  0.0  2.52920E-06  293.0  end
pu-239    11  0.0  1.32580E-04  293.0  end
pu-240    11  0.0  4.25667E-05  293.0  end
pu-241    11  0.0  2.68115E-05  293.0  end
pu-242    11  0.0  7.40231E-06  293.0  end
am-241    11  0.0  6.82477E-07  293.0  end
am-243    11  0.0  1.12799E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  3.63734E-05  293.0  end
tc-99     12  0.0  4.24647E-05  293.0  end
ru-101    12  0.0  4.04227E-05  293.0  end
rh-103    12  0.0  2.13720E-05  293.0  end
ag-109    12  0.0  2.92939E-06  293.0  end
cs-133    12  0.0  4.39058E-05  293.0  end
nd-143    12  0.0  3.15532E-05  293.0  end
nd-145    12  0.0  2.54971E-05  293.0  end
sm-147    12  0.0  2.32256E-06  293.0  end
sm-149    12  0.0  1.03836E-07  293.0  end
sm-150    12  0.0  1.01227E-05  293.0  end
sm-151    12  0.0  5.27971E-07  293.0  end
sm-152    12  0.0  4.23447E-06  293.0  end
eu-153    12  0.0  3.74564E-06  293.0  end
gd-155    12  0.0  1.18433E-09  293.0  end
u-234     12  0.0  5.00751E-06  293.0  end
u-235     12  0.0  3.29615E-04  293.0  end
u-236     12  0.0  1.04069E-04  293.0  end
u-238     12  0.0  2.15407E-02  293.0  end
np-237    12  0.0  8.91104E-06  293.0  end
pu-238    12  0.0  2.41426E-06  293.0  end
pu-239    12  0.0  1.32218E-04  293.0  end
pu-240    12  0.0  4.18236E-05  293.0  end
pu-241    12  0.0  2.62856E-05  293.0  end
pu-242    12  0.0  7.07391E-06  293.0  end
am-241    12  0.0  6.61056E-07  293.0  end
am-243    12  0.0  1.05840E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  3.56166E-05  293.0  end
tc-99     13  0.0  4.17389E-05  293.0  end
ru-101    13  0.0  3.96526E-05  293.0  end
rh-103    13  0.0  2.09998E-05  293.0  end
ag-109    13  0.0  2.84526E-06  293.0  end
cs-133    13  0.0  4.31827E-05  293.0  end
nd-143    13  0.0  3.11452E-05  293.0  end
nd-145    13  0.0  2.50844E-05  293.0  end
sm-147    13  0.0  2.26709E-06  293.0  end
sm-149    13  0.0  1.04070E-07  293.0  end
sm-150    13  0.0  9.91201E-06  293.0  end
sm-151    13  0.0  5.24130E-07  293.0  end
sm-152    13  0.0  4.16521E-06  293.0  end
eu-153    13  0.0  3.64271E-06  293.0  end
gd-155    13  0.0  1.14474E-09  293.0  end
u-234     13  0.0  5.05879E-06  293.0  end
u-235     13  0.0  3.37337E-04  293.0  end
u-236     13  0.0  1.02977E-04  293.0  end
u-238     13  0.0  2.15511E-02  293.0  end
np-237    13  0.0  8.67768E-06  293.0  end
pu-238    13  0.0  2.29860E-06  293.0  end
pu-239    13  0.0  1.31808E-04  293.0  end
pu-240    13  0.0  4.10458E-05  293.0  end
pu-241    13  0.0  2.57321E-05  293.0  end
pu-242    13  0.0  6.74198E-06  293.0  end
am-241    13  0.0  6.38790E-07  293.0  end
am-243    13  0.0  9.89299E-07  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  3.44576E-05  293.0  end
tc-99     14  0.0  4.06272E-05  293.0  end
ru-101    14  0.0  3.84781E-05  293.0  end
rh-103    14  0.0  2.04246E-05  293.0  end
ag-109    14  0.0  2.71820E-06  293.0  end
cs-133    14  0.0  4.20714E-05  293.0  end
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eu-153    11  0.0  7.52494E-06  293.0  end
gd-155    11  0.0  2.99063E-09  293.0  end
u-234     11  0.0  3.34231E-06  293.0  end
u-235     11  0.0  1.24735E-04  293.0  end
u-236     11  0.0  1.26254E-04  293.0  end
u-238     11  0.0  2.11266E-02  293.0  end
np-237    11  0.0  1.66955E-05  293.0  end
pu-238    11  0.0  8.39082E-06  293.0  end
pu-239    11  0.0  1.32485E-04  293.0  end
pu-240    11  0.0  6.24273E-05  293.0  end
pu-241    11  0.0  3.91285E-05  293.0  end
pu-242    11  0.0  2.33174E-05  293.0  end
am-241    11  0.0  1.21804E-06  293.0  end
am-243    11  0.0  5.28382E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  6.05774E-05  293.0  end
tc-99     12  0.0  6.54472E-05  293.0  end
ru-101    12  0.0  6.71636E-05  293.0  end
rh-103    12  0.0  3.18720E-05  293.0  end
ag-109    12  0.0  6.06172E-06  293.0  end
cs-133    12  0.0  6.58576E-05  293.0  end
nd-143    12  0.0  4.07041E-05  293.0  end
nd-145    12  0.0  3.82289E-05  293.0  end
sm-147    12  0.0  3.81610E-06  293.0  end
sm-149    12  0.0  9.10122E-08  293.0  end
sm-150    12  0.0  1.70919E-05  293.0  end
sm-151    12  0.0  6.34925E-07  293.0  end
sm-152    12  0.0  6.34352E-06  293.0  end
eu-153    12  0.0  7.42345E-06  293.0  end
gd-155    12  0.0  2.93373E-09  293.0  end
u-234     12  0.0  3.38349E-06  293.0  end
u-235     12  0.0  1.28685E-04  293.0  end
u-236     12  0.0  1.26040E-04  293.0  end
u-238     12  0.0  2.11393E-02  293.0  end
np-237    12  0.0  1.65004E-05  293.0  end
pu-238    12  0.0  8.19019E-06  293.0  end
pu-239    12  0.0  1.32679E-04  293.0  end
pu-240    12  0.0  6.20454E-05  293.0  end
pu-241    12  0.0  3.89470E-05  293.0  end
pu-242    12  0.0  2.27791E-05  293.0  end
am-241    12  0.0  1.21104E-06  293.0  end
am-243    12  0.0  5.12320E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  5.97211E-05  293.0  end
tc-99     13  0.0  6.46473E-05  293.0  end
ru-101    13  0.0  6.61380E-05  293.0  end
rh-103    13  0.0  3.15615E-05  293.0  end
ag-109    13  0.0  5.93872E-06  293.0  end
cs-133    13  0.0  6.51320E-05  293.0  end
nd-143    13  0.0  4.05272E-05  293.0  end
nd-145    13  0.0  3.77977E-05  293.0  end
sm-147    13  0.0  3.77769E-06  293.0  end
sm-149    13  0.0  9.15705E-08  293.0  end
sm-150    13  0.0  1.68457E-05  293.0  end
sm-151    13  0.0  6.31557E-07  293.0  end
sm-152    13  0.0  6.27260E-06  293.0  end
eu-153    13  0.0  7.28585E-06  293.0  end
gd-155    13  0.0  2.85644E-09  293.0  end
u-234     13  0.0  3.43952E-06  293.0  end
u-235     13  0.0  1.34152E-04  293.0  end
u-236     13  0.0  1.25719E-04  293.0  end
u-238     13  0.0  2.11563E-02  293.0  end
np-237    13  0.0  1.62400E-05  293.0  end
pu-238    13  0.0  7.92157E-06  293.0  end
pu-239    13  0.0  1.32930E-04  293.0  end
pu-240    13  0.0  6.15186E-05  293.0  end
pu-241    13  0.0  3.86844E-05  293.0  end
pu-242    13  0.0  2.20594E-05  293.0  end
am-241    13  0.0  1.20082E-06  293.0  end
am-243    13  0.0  4.90995E-06  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  5.83173E-05  293.0  end
tc-99     14  0.0  6.33341E-05  293.0  end
ru-101    14  0.0  6.44712E-05  293.0  end
rh-103    14  0.0  3.10423E-05  293.0  end
ag-109    14  0.0  5.73898E-06  293.0  end
cs-133    14  0.0  6.39341E-05  293.0  end
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nd-143	14	0.0	3.05087E-05	293.0	end
nd-145	14	0.0	2.44504E-05	293.0	end
sm-147	14	0.0	2.18173E-06	293.0	end
sm-149	14	0.0	1.04399E-07	293.0	end
sm-150	14	0.0	9.59030E-06	293.0	end
sm-151	14	0.0	5.18167E-07	293.0	end
sm-152	14	0.0	4.05863E-06	293.0	end
eu-153	14	0.0	3.48682E-06	293.0	end
gd-155	14	0.0	1.08567E-09	293.0	end
u-234	14	0.0	5.13750E-06	293.0	end
u-235	14	0.0	3.49325E-04	293.0	end
u-236	14	0.0	1.01275E-04	293.0	end
u-238	14	0.0	2.15669E-02	293.0	end
np-237	14	0.0	8.32254E-06	293.0	end
pu-238	14	0.0	2.12847E-06	293.0	end
pu-239	14	0.0	1.31120E-04	293.0	end
pu-240	14	0.0	3.98435E-05	293.0	end
pu-241	14	0.0	2.48695E-05	293.0	end
pu-242	14	0.0	6.25093E-06	293.0	end
am-241	14	0.0	6.04673E-07	293.0	end
am-243	14	0.0	8.89528E-07	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	3.26208E-05	293.0	end
tc-99	15	0.0	3.88633E-05	293.0	end
ru-101	15	0.0	3.66334E-05	293.0	end
rh-103	15	0.0	1.95056E-05	293.0	end
ag-109	15	0.0	2.52149E-06	293.0	end
cs-133	15	0.0	4.03024E-05	293.0	end
nd-143	15	0.0	2.94693E-05	293.0	end
nd-145	15	0.0	2.34409E-05	293.0	end
sm-147	15	0.0	2.04581E-06	293.0	end
sm-149	15	0.0	1.04818E-07	293.0	end
sm-150	15	0.0	9.08430E-06	293.0	end
sm-151	15	0.0	5.08550E-07	293.0	end
sm-152	15	0.0	3.88868E-06	293.0	end
eu-153	15	0.0	3.24470E-06	293.0	end
gd-155	15	0.0	9.96413E-10	293.0	end
u-234	15	0.0	5.26210E-06	293.0	end
u-235	15	0.0	3.68717E-04	293.0	end
u-236	15	0.0	9.84635E-05	293.0	end
u-238	15	0.0	2.15906E-02	293.0	end
np-237	15	0.0	7.76651E-06	293.0	end
pu-238	15	0.0	1.87619E-06	293.0	end
pu-239	15	0.0	1.29853E-04	293.0	end
pu-240	15	0.0	3.79097E-05	293.0	end
pu-241	15	0.0	2.34701E-05	293.0	end
pu-242	15	0.0	5.51600E-06	293.0	end
am-241	15	0.0	5.50895E-07	293.0	end
am-243	15	0.0	7.45982E-07	293.0	end
o	15	0.0	4.58960E-02	293.0	end
mo-95	16	0.0	2.92630E-05	293.0	end
tc-99	16	0.0	3.56726E-05	293.0	end
ru-101	16	0.0	3.39805E-05	293.0	end
rh-103	16	0.0	1.86627E-05	293.0	end
ag-109	16	0.0	2.46676E-06	293.0	end
cs-133	16	0.0	3.69003E-05	293.0	end
nd-143	16	0.0	2.82133E-05	293.0	end
nd-145	16	0.0	2.14914E-05	293.0	end
sm-147	16	0.0	1.68059E-06	293.0	end
sm-149	16	0.0	1.54781E-07	293.0	end
sm-150	16	0.0	8.50893E-06	293.0	end
sm-151	16	0.0	6.76677E-07	293.0	end
sm-152	16	0.0	3.46028E-06	293.0	end
eu-153	16	0.0	3.07522E-06	293.0	end
gd-155	16	0.0	1.48630E-09	293.0	end
u-234	16	0.0	5.14101E-06	293.0	end
u-235	16	0.0	4.29922E-04	293.0	end
u-236	16	0.0	9.44464E-05	293.0	end
u-238	16	0.0	2.15333E-02	293.0	end
np-237	16	0.0	8.74397E-06	293.0	end
pu-238	16	0.0	2.13179E-06	293.0	end
pu-239	16	0.0	1.76977E-04	293.0	end
pu-240	16	0.0	3.93257E-05	293.0	end
pu-241	16	0.0	2.74606E-05	293.0	end
pu-242	16	0.0	4.84553E-06	293.0	end
am-241	16	0.0	6.25484E-07	293.0	end
am-243	16	0.0	7.42792E-07	293.0	end

nd-143	14	0.0	4.02110E-05	293.0	end
nd-145	14	0.0	3.70878E-05	293.0	end
sm-147	14	0.0	3.71195E-06	293.0	end
sm-149	14	0.0	9.22134E-08	293.0	end
sm-150	14	0.0	1.64405E-05	293.0	end
sm-151	14	0.0	6.25396E-07	293.0	end
sm-152	14	0.0	6.15690E-06	293.0	end
eu-153	14	0.0	7.06000E-06	293.0	end
gd-155	14	0.0	2.72474E-09	293.0	end
u-234	14	0.0	3.53182E-06	293.0	end
u-235	14	0.0	1.43388E-04	293.0	end
u-236	14	0.0	1.25122E-04	293.0	end
u-238	14	0.0	2.11834E-02	293.0	end
np-237	14	0.0	1.58527E-05	293.0	end
pu-238	14	0.0	7.48969E-06	293.0	end
pu-239	14	0.0	1.33284E-04	293.0	end
pu-240	14	0.0	6.06508E-05	293.0	end
pu-241	14	0.0	3.81956E-05	293.0	end
pu-242	14	0.0	2.09077E-05	293.0	end
am-241	14	0.0	1.18227E-06	293.0	end
am-243	14	0.0	4.56963E-06	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	5.59766E-05	293.0	end
tc-99	15	0.0	6.11354E-05	293.0	end
ru-101	15	0.0	6.17305E-05	293.0	end
rh-103	15	0.0	3.01438E-05	293.0	end
ag-109	15	0.0	5.41006E-06	293.0	end
cs-133	15	0.0	6.19087E-05	293.0	end
nd-143	15	0.0	3.96147E-05	293.0	end
nd-145	15	0.0	3.58942E-05	293.0	end
sm-147	15	0.0	3.59443E-06	293.0	end
sm-149	15	0.0	9.35183E-08	293.0	end
sm-150	15	0.0	1.57616E-05	293.0	end
sm-151	15	0.0	6.15679E-07	293.0	end
sm-152	15	0.0	5.96088E-06	293.0	end
eu-153	15	0.0	6.68553E-06	293.0	end
gd-155	15	0.0	2.51946E-09	293.0	end
u-234	15	0.0	3.68665E-06	293.0	end
u-235	15	0.0	1.59551E-04	293.0	end
u-236	15	0.0	1.23904E-04	293.0	end
u-238	15	0.0	2.12279E-02	293.0	end
np-237	15	0.0	1.51594E-05	293.0	end
pu-238	15	0.0	6.79175E-06	293.0	end
pu-239	15	0.0	1.33837E-04	293.0	end
pu-240	15	0.0	5.90808E-05	293.0	end
pu-241	15	0.0	3.73309E-05	293.0	end
pu-242	15	0.0	1.90485E-05	293.0	end
am-241	15	0.0	1.14652E-06	293.0	end
am-243	15	0.0	4.03851E-06	293.0	end
o	15	0.0	4.58960E-02	293.0	end
mo-95	16	0.0	5.09290E-05	293.0	end
tc-99	16	0.0	5.63971E-05	293.0	end
ru-101	16	0.0	5.72361E-05	293.0	end
rh-103	16	0.0	2.99927E-05	293.0	end
ag-109	16	0.0	5.12974E-06	293.0	end
cs-133	16	0.0	5.70213E-05	293.0	end
nd-143	16	0.0	4.12493E-05	293.0	end
nd-145	16	0.0	3.32364E-05	293.0	end
sm-147	16	0.0	2.99597E-06	293.0	end
sm-149	16	0.0	1.62307E-07	293.0	end
sm-150	16	0.0	1.48009E-05	293.0	end
sm-151	16	0.0	9.26712E-07	293.0	end
sm-152	16	0.0	5.30372E-06	293.0	end
eu-153	16	0.0	6.22674E-06	293.0	end
gd-155	16	0.0	4.33744E-09	293.0	end
u-234	16	0.0	3.65669E-06	293.0	end
u-235	16	0.0	2.39857E-04	293.0	end
u-236	16	0.0	1.19951E-04	293.0	end
u-238	16	0.0	2.11489E-02	293.0	end
np-237	16	0.0	1.70778E-05	293.0	end
pu-238	16	0.0	7.61244E-06	293.0	end
pu-239	16	0.0	2.05961E-04	293.0	end
pu-240	16	0.0	6.40563E-05	293.0	end
pu-241	16	0.0	4.88499E-05	293.0	end
pu-242	16	0.0	1.56865E-05	293.0	end
am-241	16	0.0	1.60170E-06	293.0	end
am-243	16	0.0	3.70170E-06	293.0	end

o	16	0.0	4.58960E-02	293.0	end	o	16	0.0	4.58960E-02	293.0	end
mo-95	17	0.0	2.49846E-05	293.0	end	mo-95	17	0.0	4.53387E-05	293.0	end
tc-99	17	0.0	3.15498E-05	293.0	end	tc-99	17	0.0	5.10893E-05	293.0	end
ru-101	17	0.0	2.97112E-05	293.0	end	ru-101	17	0.0	5.09628E-05	293.0	end
rh-103	17	0.0	1.62961E-05	293.0	end	rh-103	17	0.0	2.72065E-05	293.0	end
ag-109	17	0.0	2.01934E-06	293.0	end	ag-109	17	0.0	4.38946E-06	293.0	end
cs-133	17	0.0	3.27452E-05	293.0	end	cs-133	17	0.0	5.20060E-05	293.0	end
nd-143	17	0.0	2.52787E-05	293.0	end	nd-143	17	0.0	3.81946E-05	293.0	end
nd-145	17	0.0	1.91118E-05	293.0	end	nd-145	17	0.0	3.02590E-05	293.0	end
sm-147	17	0.0	1.39790E-06	293.0	end	sm-147	17	0.0	2.69260E-06	293.0	end
sm-149	17	0.0	1.51262E-07	293.0	end	sm-149	17	0.0	1.61536E-07	293.0	end
sm-150	17	0.0	7.32690E-06	293.0	end	sm-150	17	0.0	1.31508E-05	293.0	end
sm-151	17	0.0	6.27006E-07	293.0	end	sm-151	17	0.0	8.62618E-07	293.0	end
sm-152	17	0.0	3.07161E-06	293.0	end	sm-152	17	0.0	4.84635E-06	293.0	end
eu-153	17	0.0	2.53023E-06	293.0	end	eu-153	17	0.0	5.37101E-06	293.0	end
gd-155	17	0.0	1.15135E-09	293.0	end	gd-155	17	0.0	3.39934E-09	293.0	end
u-234	17	0.0	5.45399E-06	293.0	end	u-234	17	0.0	4.02008E-06	293.0	end
u-235	17	0.0	4.75122E-04	293.0	end	u-235	17	0.0	2.82758E-04	293.0	end
u-236	17	0.0	8.71458E-05	293.0	end	u-236	17	0.0	1.15231E-04	293.0	end
u-238	17	0.0	2.15984E-02	293.0	end	u-238	17	0.0	2.12574E-02	293.0	end
np-237	17	0.0	7.21537E-06	293.0	end	np-237	17	0.0	1.48982E-05	293.0	end
pu-238	17	0.0	1.51896E-06	293.0	end	pu-238	17	0.0	5.78822E-06	293.0	end
pu-239	17	0.0	1.67460E-04	293.0	end	pu-239	17	0.0	2.00871E-04	293.0	end
pu-240	17	0.0	3.39682E-05	293.0	end	pu-240	17	0.0	5.82008E-05	293.0	end
pu-241	17	0.0	2.28112E-05	293.0	end	pu-241	17	0.0	4.38693E-05	293.0	end
pu-242	17	0.0	3.46675E-06	293.0	end	pu-242	17	0.0	1.22803E-05	293.0	end
am-241	17	0.0	4.63818E-07	293.0	end	am-241	17	0.0	1.34344E-06	293.0	end
am-243	17	0.0	4.63625E-07	293.0	end	am-243	17	0.0	2.68159E-06	293.0	end
o	17	0.0	4.58960E-02	293.0	end	o	17	0.0	4.58960E-02	293.0	end
mo-95	18	0.0	1.73104E-05	293.0	end	mo-95	18	0.0	3.42666E-05	293.0	end
tc-99	18	0.0	2.41222E-05	293.0	end	tc-99	18	0.0	4.04857E-05	293.0	end
ru-101	18	0.0	2.22734E-05	293.0	end	ru-101	18	0.0	3.91026E-05	293.0	end
rh-103	18	0.0	1.19898E-05	293.0	end	rh-103	18	0.0	2.13892E-05	293.0	end
ag-109	18	0.0	1.29862E-06	293.0	end	ag-109	18	0.0	3.02721E-06	293.0	end
cs-133	18	0.0	2.51558E-05	293.0	end	cs-133	18	0.0	4.16939E-05	293.0	end
nd-143	18	0.0	1.97172E-05	293.0	end	nd-143	18	0.0	3.15008E-05	293.0	end
nd-145	18	0.0	1.47806E-05	293.0	end	nd-145	18	0.0	2.42500E-05	293.0	end
sm-147	18	0.0	9.06763E-07	293.0	end	sm-147	18	0.0	2.00967E-06	293.0	end
sm-149	18	0.0	1.42348E-07	293.0	end	sm-149	18	0.0	1.57841E-07	293.0	end
sm-150	18	0.0	5.28886E-06	293.0	end	sm-150	18	0.0	9.92606E-06	293.0	end
sm-151	18	0.0	5.37314E-07	293.0	end	sm-151	18	0.0	7.34702E-07	293.0	end
sm-152	18	0.0	2.34710E-06	293.0	end	sm-152	18	0.0	3.90359E-06	293.0	end
eu-153	18	0.0	1.64874E-06	293.0	end	eu-153	18	0.0	3.75341E-06	293.0	end
gd-155	18	0.0	7.01769E-10	293.0	end	gd-155	18	0.0	1.96535E-09	293.0	end
u-234	18	0.0	6.02958E-06	293.0	end	u-234	18	0.0	4.78195E-06	293.0	end
u-235	18	0.0	5.63255E-04	293.0	end	u-235	18	0.0	3.80319E-04	293.0	end
u-236	18	0.0	7.20874E-05	293.0	end	u-236	18	0.0	1.02041E-04	293.0	end
u-238	18	0.0	2.17085E-02	293.0	end	u-238	18	0.0	2.14533E-02	293.0	end
np-237	18	0.0	4.70199E-06	293.0	end	np-237	18	0.0	1.06080E-05	293.0	end
pu-238	18	0.0	7.31742E-07	293.0	end	pu-238	18	0.0	3.02951E-06	293.0	end
pu-239	18	0.0	1.45650E-04	293.0	end	pu-239	18	0.0	1.86207E-04	293.0	end
pu-240	18	0.0	2.42397E-05	293.0	end	pu-240	18	0.0	4.54577E-05	293.0	end
pu-241	18	0.0	1.46019E-05	293.0	end	pu-241	18	0.0	3.28165E-05	293.0	end
pu-242	18	0.0	1.61382E-06	293.0	end	pu-242	18	0.0	6.77733E-06	293.0	end
am-241	18	0.0	2.28391E-07	293.0	end	am-241	18	0.0	8.35494E-07	293.0	end
am-243	18	0.0	1.58691E-07	293.0	end	am-243	18	0.0	1.18983E-06	293.0	end
o	18	0.0	4.58960E-02	293.0	end	o	18	0.0	4.58960E-02	293.0	end
mo-95	19	0.0	3.60489E-06	293.0	end	mo-95	19	0.0	1.07992E-05	293.0	end
tc-99	19	0.0	9.62205E-06	293.0	end	tc-99	19	0.0	1.76762E-05	293.0	end
ru-101	19	0.0	8.62330E-06	293.0	end	ru-101	19	0.0	1.60668E-05	293.0	end
rh-103	19	0.0	3.72052E-06	293.0	end	rh-103	19	0.0	8.25125E-06	293.0	end
ag-109	19	0.0	2.80964E-07	293.0	end	ag-109	19	0.0	7.75062E-07	293.0	end
cs-133	19	0.0	1.00124E-05	293.0	end	cs-133	19	0.0	1.84718E-05	293.0	end
nd-143	19	0.0	7.82217E-06	293.0	end	nd-143	19	0.0	1.46035E-05	293.0	end
nd-145	19	0.0	6.11608E-06	293.0	end	nd-145	19	0.0	1.09672E-05	293.0	end
sm-147	19	0.0	1.66025E-07	293.0	end	sm-147	19	0.0	5.27112E-07	293.0	end
sm-149	19	0.0	1.12591E-07	293.0	end	sm-149	19	0.0	1.31370E-07	293.0	end
sm-150	19	0.0	1.77893E-06	293.0	end	sm-150	19	0.0	3.63945E-06	293.0	end
sm-151	19	0.0	3.39708E-07	293.0	end	sm-151	19	0.0	4.57408E-07	293.0	end
sm-152	19	0.0	8.48281E-07	293.0	end	sm-152	19	0.0	1.69108E-06	293.0	end
eu-153	19	0.0	4.06906E-07	293.0	end	eu-153	19	0.0	1.00906E-06	293.0	end
gd-155	19	0.0	2.38783E-10	293.0	end	gd-155	19	0.0	4.44172E-10	293.0	end
u-234	19	0.0	7.18904E-06	293.0	end	u-234	19	0.0	6.53976E-06	293.0	end
u-235	19	0.0	7.63846E-04	293.0	end	u-235	19	0.0	6.47341E-04	293.0	end
u-236	19	0.0	3.50434E-05	293.0	end	u-236	19	0.0	5.69246E-05	293.0	end
u-238	19	0.0	2.18987E-02	293.0	end	u-238	19	0.0	2.17965E-02	293.0	end
np-237	19	0.0	1.12639E-06	293.0	end	np-237	19	0.0	2.86069E-06	293.0	end

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 pu-238   19  0.0  6.67749E-08  293.0  end
 pu-239   19  0.0  7.78525E-05  293.0  end
 pu-240   19  0.0  6.56349E-06  293.0  end
 pu-241   19  0.0  2.16806E-06  293.0  end
 pu-242   19  0.0  8.57529E-08  293.0  end
 am-241   19  0.0  1.30160E-08  293.0  end
 am-243   19  0.0  2.92719E-09  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id04180_b30.mip

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 pu-238   19  0.0  3.20752E-07  293.0  end
 pu-239   19  0.0  1.20509E-04  293.0  end
 pu-240   19  0.0  1.59776E-05  293.0  end
 pu-241   19  0.0  8.15522E-06  293.0  end
 pu-242   19  0.0  6.30115E-07  293.0  end
 am-241   19  0.0  9.26971E-08  293.0  end
 am-243   19  0.0  4.31533E-08  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id04180_b50.mip

File ed24_f01_id05225_b30.mip

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 mo-95     1  0.0  4.67069E-06  293.0  end
 tc-99     1  0.0  1.09863E-05  293.0  end
 ru-101    1  0.0  9.76043E-06  293.0  end
 rh-103    1  0.0  4.33782E-06  293.0  end
 ag-109    1  0.0  2.96840E-07  293.0  end
 cs-133    1  0.0  1.14667E-05  293.0  end
 nd-143    1  0.0  9.00927E-06  293.0  end
 nd-145    1  0.0  6.97408E-06  293.0  end
 sm-147    1  0.0  2.19762E-07  293.0  end
 sm-149    1  0.0  9.14633E-08  293.0  end
 sm-150    1  0.0  2.03663E-06  293.0  end
 sm-151    1  0.0  3.17012E-07  293.0  end
 sm-152    1  0.0  1.00990E-06  293.0  end
 eu-153    1  0.0  4.53614E-07  293.0  end
 gd-155    1  0.0  2.04788E-10  293.0  end
 u-234     1  0.0  7.22023E-06  293.0  end
 u-235     1  0.0  7.38873E-04  293.0  end
 u-236     1  0.0  3.73654E-05  293.0  end
 u-238     1  0.0  2.19107E-02  293.0  end
 np-237    1  0.0  1.05409E-06  293.0  end
 pu-238    1  0.0  6.33352E-08  293.0  end
 pu-239    1  0.0  6.66489E-05  293.0  end
 pu-240    1  0.0  6.76284E-06  293.0  end
 pu-241    1  0.0  2.13231E-06  293.0  end
 pu-242    1  0.0  1.00259E-07  293.0  end
 am-241    1  0.0  1.44253E-08  293.0  end
 am-243    1  0.0  3.04791E-09  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  2.12313E-05  293.0  end
 tc-99     2  0.0  2.79087E-05  293.0  end
 ru-101    2  0.0  2.55954E-05  293.0  end
 rh-103    2  0.0  1.36186E-05  293.0  end
 ag-109    2  0.0  1.43798E-06  293.0  end
 cs-133    2  0.0  2.91472E-05  293.0  end
 nd-143    2  0.0  2.22842E-05  293.0  end
 nd-145    2  0.0  1.70912E-05  293.0  end
 sm-147    2  0.0  1.21594E-06  293.0  end
 sm-149    2  0.0  1.04634E-07  293.0  end
 sm-150    2  0.0  6.07782E-06  293.0  end
 sm-151    2  0.0  4.44308E-07  293.0  end
 sm-152    2  0.0  2.80210E-06  293.0  end
 eu-153    2  0.0  1.89643E-06  293.0  end
 gd-155    2  0.0  5.57124E-10  293.0  end
 u-234     2  0.0  6.03439E-06  293.0  end
 u-235     2  0.0  4.99519E-04  293.0  end
 u-236     2  0.0  7.82335E-05  293.0  end
 u-238     2  0.0  2.17298E-02  293.0  end
 np-237    2  0.0  4.56568E-06  293.0  end
 pu-238    2  0.0  7.41492E-07  293.0  end
 pu-239    2  0.0  1.16328E-04  293.0  end
 pu-240    2  0.0  2.54122E-05  293.0  end
 pu-241    2  0.0  1.42574E-05  293.0  end
 pu-242    2  0.0  2.09726E-06  293.0  end
 am-241    2  0.0  2.49228E-07  293.0  end
 am-243    2  0.0  1.91755E-07  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
```

File ed24_f01_id05225_b50.mip

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lfd.Nr.:   2 aus sha_alf.mod


 mo-95     1  0.0  1.26482E-05  293.0  end
 tc-99     1  0.0  1.95368E-05  293.0  end
 ru-101    1  0.0  1.75918E-05  293.0  end
 rh-103    1  0.0  9.00247E-06  293.0  end
 ag-109    1  0.0  7.84850E-07  293.0  end
 cs-133    1  0.0  2.04575E-05  293.0  end
 nd-143    1  0.0  1.60256E-05  293.0  end
 nd-145    1  0.0  1.21365E-05  293.0  end
 sm-147    1  0.0  6.53922E-07  293.0  end
 sm-149    1  0.0  1.00426E-07  293.0  end
 sm-150    1  0.0  3.97195E-06  293.0  end
 sm-151    1  0.0  3.89219E-07  293.0  end
 sm-152    1  0.0  1.93048E-06  293.0  end
 eu-153    1  0.0  1.07424E-06  293.0  end
 gd-155    1  0.0  3.43221E-10  293.0  end
 u-234     1  0.0  6.62234E-06  293.0  end
 u-235     1  0.0  6.11882E-04  293.0  end
 u-236     1  0.0  5.95161E-05  293.0  end
 u-238     1  0.0  2.18235E-02  293.0  end
 np-237    1  0.0  2.56224E-06  293.0  end
 pu-238    1  0.0  2.82537E-07  293.0  end
 pu-239    1  0.0  9.73220E-05  293.0  end
 pu-240    1  0.0  1.57889E-05  293.0  end
 pu-241    1  0.0  7.44622E-06  293.0  end
 pu-242    1  0.0  6.91114E-07  293.0  end
 am-241    1  0.0  9.13615E-08  293.0  end
 am-243    1  0.0  4.11972E-08  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  3.98296E-05  293.0  end
 tc-99     2  0.0  4.57776E-05  293.0  end
 ru-101    2  0.0  4.39881E-05  293.0  end
 rh-103    2  0.0  2.30492E-05  293.0  end
 ag-109    2  0.0  3.32577E-06  293.0  end
 cs-133    2  0.0  4.71892E-05  293.0  end
 nd-143    2  0.0  3.33345E-05  293.0  end
 nd-145    2  0.0  2.73747E-05  293.0  end
 sm-147    2  0.0  2.57287E-06  293.0  end
 sm-149    2  0.0  1.02568E-07  293.0  end
 sm-150    2  0.0  1.10964E-05  293.0  end
 sm-151    2  0.0  5.45081E-07  293.0  end
 sm-152    2  0.0  4.54846E-06  293.0  end
 eu-153    2  0.0  4.22833E-06  293.0  end
 gd-155    2  0.0  1.37673E-09  293.0  end
 u-234     2  0.0  4.77306E-06  293.0  end
 u-235     2  0.0  2.95379E-04  293.0  end
 u-236     2  0.0  1.08742E-04  293.0  end
 u-238     2  0.0  2.14917E-02  293.0  end
 np-237    2  0.0  9.99246E-06  293.0  end
 pu-238    2  0.0  2.99116E-06  293.0  end
 pu-239    2  0.0  1.33676E-04  293.0  end
 pu-240    2  0.0  4.52922E-05  293.0  end
 pu-241    2  0.0  2.87132E-05  293.0  end
 pu-242    2  0.0  8.70806E-06  293.0  end
 am-241    2  0.0  7.61991E-07  293.0  end
 am-243    2  0.0  1.41614E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
```

```
mo-95     3  0.0  2.90427E-05  293.0  end
tc-99     3  0.0  3.54266E-05  293.0  end
ru-101    3  0.0  3.30957E-05  293.0  end
rh-103    3  0.0  1.76880E-05  293.0  end
ag-109    3  0.0  2.15539E-06  293.0  end
cs-133    3  0.0  3.68325E-05  293.0  end
nd-143    3  0.0  2.73465E-05  293.0  end
nd-145    3  0.0  2.14648E-05  293.0  end
sm-147    3  0.0  1.78074E-06  293.0  end
sm-149    3  0.0  1.05311E-07  293.0  end
sm-150    3  0.0  8.11454E-06  293.0  end
sm-151    3  0.0  4.89233E-07  293.0  end
sm-152    3  0.0  3.55372E-06  293.0  end
eu-153    3  0.0  2.79184E-06  293.0  end
gd-155    3  0.0  8.37506E-10  293.0  end
u-234     3  0.0  5.50475E-06  293.0  end
u-235     3  0.0  4.07826E-04  293.0  end
u-236     3  0.0  9.26287E-05  293.0  end
u-238     3  0.0  2.16368E-02  293.0  end
np-237    3  0.0  6.71084E-06  293.0  end
pu-238    3  0.0  1.44346E-06  293.0  end
pu-239    3  0.0  1.26732E-04  293.0  end
pu-240    3  0.0  3.40627E-05  293.0  end
pu-241    3  0.0  2.06501E-05  293.0  end
pu-242    3  0.0  4.23479E-06  293.0  end
am-241    3  0.0  4.48617E-07  293.0  end
am-243    3  0.0  5.14189E-07  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  3.66247E-05  293.0  end
tc-99     4  0.0  4.27056E-05  293.0  end
ru-101    4  0.0  4.06791E-05  293.0  end
rh-103    4  0.0  2.14951E-05  293.0  end
ag-109    4  0.0  2.95753E-06  293.0  end
cs-133    4  0.0  4.41455E-05  293.0  end
nd-143    4  0.0  3.16872E-05  293.0  end
nd-145    4  0.0  2.56340E-05  293.0  end
sm-147    4  0.0  2.34093E-06  293.0  end
sm-149    4  0.0  1.03755E-07  293.0  end
sm-150    4  0.0  1.01928E-05  293.0  end
sm-151    4  0.0  5.29238E-07  293.0  end
sm-152    4  0.0  4.25742E-06  293.0  end
eu-153    4  0.0  3.78002E-06  293.0  end
gd-155    4  0.0  1.19767E-09  293.0  end
u-234     4  0.0  4.99050E-06  293.0  end
u-235     4  0.0  3.27069E-04  293.0  end
u-236     4  0.0  1.04426E-04  293.0  end
u-238     4  0.0  2.15373E-02  293.0  end
np-237    4  0.0  8.98879E-06  293.0  end
pu-238    4  0.0  2.45348E-06  293.0  end
pu-239    4  0.0  1.32347E-04  293.0  end
pu-240    4  0.0  4.20805E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end
```

```
mo-95     3  0.0  5.06994E-05  293.0  end
tc-99     3  0.0  5.61459E-05  293.0  end
ru-101    3  0.0  5.57179E-05  293.0  end
rh-103    3  0.0  2.79821E-05  293.0  end
ag-109    3  0.0  4.69054E-06  293.0  end
cs-133    3  0.0  5.72281E-05  293.0  end
nd-143    3  0.0  3.79639E-05  293.0  end
nd-145    3  0.0  3.31608E-05  293.0  end
sm-147    3  0.0  3.29644E-06  293.0  end
sm-149    3  0.0  9.68565E-08  293.0  end
sm-150    3  0.0  1.42273E-05  293.0  end
sm-151    3  0.0  5.94146E-07  293.0  end
sm-152    3  0.0  5.50897E-06  293.0  end
eu-153    3  0.0  5.85408E-06  293.0  end
gd-155    3  0.0  2.10197E-09  293.0  end
u-234     3  0.0  4.03888E-06  293.0  end
u-235     3  0.0  1.99381E-04  293.0  end
u-236     3  0.0  1.20224E-04  293.0  end
u-238     3  0.0  2.13218E-02  293.0  end
np-237    3  0.0  1.34780E-05  293.0  end
pu-238    3  0.0  5.34761E-06  293.0  end
pu-239    3  0.0  1.34721E-04  293.0  end
pu-240    3  0.0  5.50798E-05  293.0  end
pu-241    3  0.0  3.50511E-05  293.0  end
pu-242    3  0.0  1.51762E-05  293.0  end
am-241    3  0.0  1.04439E-06  293.0  end
am-243    3  0.0  2.99423E-06  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  5.96712E-05  293.0  end
tc-99     4  0.0  6.46007E-05  293.0  end
ru-101    4  0.0  6.60785E-05  293.0  end
rh-103    4  0.0  3.15433E-05  293.0  end
ag-109    4  0.0  5.93158E-06  293.0  end
cs-133    4  0.0  6.50896E-05  293.0  end
nd-143    4  0.0  4.05165E-05  293.0  end
nd-145    4  0.0  3.77725E-05  293.0  end
sm-147    4  0.0  3.77541E-06  293.0  end
sm-149    4  0.0  9.15997E-08  293.0  end
sm-150    4  0.0  1.68313E-05  293.0  end
sm-151    4  0.0  6.31352E-07  293.0  end
sm-152    4  0.0  6.26848E-06  293.0  end
eu-153    4  0.0  7.27784E-06  293.0  end
gd-155    4  0.0  2.85189E-09  293.0  end
u-234     4  0.0  3.44279E-06  293.0  end
u-235     4  0.0  1.34474E-04  293.0  end
u-236     4  0.0  1.25700E-04  293.0  end
u-238     4  0.0  2.11573E-02  293.0  end
np-237    4  0.0  1.62253E-05  293.0  end
pu-238    4  0.0  7.90604E-06  293.0  end
pu-239    4  0.0  1.32944E-04  293.0  end
pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  8.76042E-06  293.0  end
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pu-239    5  0.0  1.33299E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end
pu-242    5  0.0  8.19047E-06  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  3.99245E-05  293.0  end
tc-99     6  0.0  4.58684E-05  293.0  end
ru-101    6  0.0  4.40871E-05  293.0  end
rh-103    6  0.0  2.30946E-05  293.0  end
ag-109    6  0.0  3.33693E-06  293.0  end
cs-133    6  0.0  4.72788E-05  293.0  end
nd-143    6  0.0  3.33814E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end
sm-147    7  0.0  2.60653E-06  293.0  end
sm-149    7  0.0  1.02369E-07  293.0  end
sm-150    7  0.0  1.12305E-05  293.0  end
sm-151    7  0.0  5.47362E-07  293.0  end
sm-152    7  0.0  4.59108E-06  293.0  end
eu-153    7  0.0  4.29579E-06  293.0  end
gd-155    7  0.0  1.40447E-09  293.0  end
u-234     7  0.0  4.74102E-06  293.0  end
u-235     7  0.0  2.90831E-04  293.0  end
u-236     7  0.0  1.09344E-04  293.0  end
u-238     7  0.0  2.14850E-02  293.0  end
np-237    7  0.0  1.01420E-05  293.0  end
pu-238    7  0.0  3.07627E-06  293.0  end
pu-239    7  0.0  1.33828E-04  293.0  end
pu-240    7  0.0  4.57545E-05  293.0  end
pu-241    7  0.0  2.90311E-05  293.0  end
pu-242    7  0.0  8.94661E-06  293.0  end
am-241    7  0.0  7.75585E-07  293.0  end
am-243    7  0.0  1.47055E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  3.95792E-05  293.0  end
tc-99     8  0.0  4.55378E-05  293.0  end
ru-101    8  0.0  4.37271E-05  293.0  end
rh-103    8  0.0  2.29293E-05  293.0  end
ag-109    8  0.0  3.29641E-06  293.0  end
cs-133    8  0.0  4.69526E-05  293.0  end
nd-143    8  0.0  3.32102E-05  293.0  end
nd-145    8  0.0  2.72393E-05  293.0  end
sm-147    8  0.0  2.55497E-06  293.0  end
sm-149    8  0.0  1.02671E-07  293.0  end
sm-150    8  0.0  1.10254E-05  293.0  end
sm-151    8  0.0  5.43866E-07  293.0  end
sm-152    8  0.0  4.52584E-06  293.0  end
eu-153    8  0.0  4.19271E-06  293.0  end
```

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pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  3.94419E-05  293.0  end
pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  5.58383E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  6.36571E-05  293.0  end
tc-99     6  0.0  6.83111E-05  293.0  end
ru-101    6  0.0  7.09080E-05  293.0  end
rh-103    6  0.0  3.29433E-05  293.0  end
ag-109    6  0.0  6.50953E-06  293.0  end
cs-133    6  0.0  6.84264E-05  293.0  end
nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  4.00320E-05  293.0  end
sm-147    7  0.0  3.96292E-06  293.0  end
sm-149    7  0.0  8.86158E-08  293.0  end
sm-150    7  0.0  1.81246E-05  293.0  end
sm-151    7  0.0  6.48610E-07  293.0  end
sm-152    7  0.0  6.64004E-06  293.0  end
eu-153    7  0.0  8.00504E-06  293.0  end
gd-155    7  0.0  3.27190E-09  293.0  end
u-234     7  0.0  3.14936E-06  293.0  end
u-235     7  0.0  1.07033E-04  293.0  end
u-236     7  0.0  1.27003E-04  293.0  end
u-238     7  0.0  2.10638E-02  293.0  end
np-237    7  0.0  1.75686E-05  293.0  end
pu-238    7  0.0  9.36658E-06  293.0  end
pu-239    7  0.0  1.31543E-04  293.0  end
pu-240    7  0.0  6.41029E-05  293.0  end
pu-241    7  0.0  3.98988E-05  293.0  end
pu-242    7  0.0  2.59358E-05  293.0  end
am-241    7  0.0  1.24514E-06  293.0  end
am-243    7  0.0  6.08700E-06  293.0  end
o         7  0.0  4.58960E-02  293.0  end
mo-95     8  0.0  6.35416E-05  293.0  end
tc-99     8  0.0  6.82041E-05  293.0  end
ru-101    8  0.0  7.07660E-05  293.0  end
rh-103    8  0.0  3.29044E-05  293.0  end
ag-109    8  0.0  6.49260E-06  293.0  end
cs-133    8  0.0  6.83313E-05  293.0  end
nd-143    8  0.0  4.12258E-05  293.0  end
nd-145    8  0.0  3.97090E-05  293.0  end
sm-147    8  0.0  3.93831E-06  293.0  end
sm-149    8  0.0  8.90389E-08  293.0  end
sm-150    8  0.0  1.79393E-05  293.0  end
sm-151    8  0.0  6.46165E-07  293.0  end
sm-152    8  0.0  6.58693E-06  293.0  end
eu-153    8  0.0  7.90004E-06  293.0  end
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gd-155	8	0.0	1.36216E-09	293.0	end	gd-155	8	0.0	3.20910E-09	293.0	end
u-234	8	0.0	4.79005E-06	293.0	end	u-234	8	0.0	3.19131E-06	293.0	end
u-235	8	0.0	2.97803E-04	293.0	end	u-235	8	0.0	1.10770E-04	293.0	end
u-236	8	0.0	1.08419E-04	293.0	end	u-236	8	0.0	1.26880E-04	293.0	end
u-238	8	0.0	2.14952E-02	293.0	end	u-238	8	0.0	2.10779E-02	293.0	end
np-237	8	0.0	9.91337E-06	293.0	end	np-237	8	0.0	1.73813E-05	293.0	end
pu-238	8	0.0	2.94667E-06	293.0	end	pu-238	8	0.0	9.14952E-06	293.0	end
pu-239	8	0.0	1.33592E-04	293.0	end	pu-239	8	0.0	1.31758E-04	293.0	end
pu-240	8	0.0	4.50459E-05	293.0	end	pu-240	8	0.0	6.37523E-05	293.0	end
pu-241	8	0.0	2.85432E-05	293.0	end	pu-241	8	0.0	3.97436E-05	293.0	end
pu-242	8	0.0	8.58315E-06	293.0	end	pu-242	8	0.0	2.53525E-05	293.0	end
am-241	8	0.0	7.54760E-07	293.0	end	am-241	8	0.0	1.24005E-06	293.0	end
am-243	8	0.0	1.38782E-06	293.0	end	am-243	8	0.0	5.90529E-06	293.0	end
o	8	0.0	4.58960E-02	293.0	end	o	8	0.0	4.58960E-02	293.0	end
mo-95	9	0.0	3.85161E-05	293.0	end	mo-95	9	0.0	6.25017E-05	293.0	end
tc-99	9	0.0	4.45193E-05	293.0	end	tc-99	9	0.0	6.72392E-05	293.0	end
ru-101	9	0.0	4.26241E-05	293.0	end	ru-101	9	0.0	6.94929E-05	293.0	end
rh-103	9	0.0	2.24167E-05	293.0	end	rh-103	9	0.0	3.25501E-05	293.0	end
ag-109	9	0.0	3.17286E-06	293.0	end	ag-109	9	0.0	6.34060E-06	293.0	end
cs-133	9	0.0	4.59459E-05	293.0	end	cs-133	9	0.0	6.74704E-05	293.0	end
nd-143	9	0.0	3.26739E-05	293.0	end	nd-143	9	0.0	4.10587E-05	293.0	end
nd-145	9	0.0	2.66628E-05	293.0	end	nd-145	9	0.0	3.91922E-05	293.0	end
sm-147	9	0.0	2.47847E-06	293.0	end	sm-147	9	0.0	3.89739E-06	293.0	end
sm-149	9	0.0	1.03087E-07	293.0	end	sm-149	9	0.0	8.97077E-08	293.0	end
sm-150	9	0.0	1.07246E-05	293.0	end	sm-150	9	0.0	1.76431E-05	293.0	end
sm-151	9	0.0	5.38669E-07	293.0	end	sm-151	9	0.0	6.42227E-07	293.0	end
sm-152	9	0.0	4.42961E-06	293.0	end	sm-152	9	0.0	6.50205E-06	293.0	end
eu-153	9	0.0	4.04254E-06	293.0	end	eu-153	9	0.0	7.73280E-06	293.0	end
gd-155	9	0.0	1.30144E-09	293.0	end	gd-155	9	0.0	3.11030E-09	293.0	end
u-234	9	0.0	4.86219E-06	293.0	end	u-234	9	0.0	3.25841E-06	293.0	end
u-235	9	0.0	3.08189E-04	293.0	end	u-235	9	0.0	1.16875E-04	293.0	end
u-236	9	0.0	1.07020E-04	293.0	end	u-236	9	0.0	1.26635E-04	293.0	end
u-238	9	0.0	2.15106E-02	293.0	end	u-238	9	0.0	2.10999E-02	293.0	end
np-237	9	0.0	9.57877E-06	293.0	end	np-237	9	0.0	1.70808E-05	293.0	end
pu-238	9	0.0	2.76242E-06	293.0	end	pu-238	9	0.0	8.80797E-06	293.0	end
pu-239	9	0.0	1.33196E-04	293.0	end	pu-239	9	0.0	1.32088E-04	293.0	end
pu-240	9	0.0	4.39911E-05	293.0	end	pu-240	9	0.0	6.31770E-05	293.0	end
pu-241	9	0.0	2.78109E-05	293.0	end	pu-241	9	0.0	3.94804E-05	293.0	end
pu-242	9	0.0	8.06416E-06	293.0	end	pu-242	9	0.0	2.44361E-05	293.0	end
am-241	9	0.0	7.23880E-07	293.0	end	am-241	9	0.0	1.23098E-06	293.0	end
am-243	9	0.0	1.27181E-06	293.0	end	am-243	9	0.0	5.62282E-06	293.0	end
o	9	0.0	4.58960E-02	293.0	end	o	9	0.0	4.58960E-02	293.0	end
mo-95	10	0.0	3.77225E-05	293.0	end	mo-95	10	0.0	6.17218E-05	293.0	end
tc-99	10	0.0	4.37585E-05	293.0	end	tc-99	10	0.0	6.65140E-05	293.0	end
ru-101	10	0.0	4.18054E-05	293.0	end	ru-101	10	0.0	6.85447E-05	293.0	end
rh-103	10	0.0	2.20313E-05	293.0	end	rh-103	10	0.0	3.22787E-05	293.0	end
ag-109	10	0.0	3.08180E-06	293.0	end	ag-109	10	0.0	6.22720E-06	293.0	end
cs-133	10	0.0	4.51918E-05	293.0	end	cs-133	10	0.0	6.68198E-05	293.0	end
nd-143	10	0.0	3.22648E-05	293.0	end	nd-143	10	0.0	4.09220E-05	293.0	end
nd-145	10	0.0	2.62314E-05	293.0	end	nd-145	10	0.0	3.88028E-05	293.0	end
sm-147	10	0.0	2.42095E-06	293.0	end	sm-147	10	0.0	3.86531E-06	293.0	end
sm-149	10	0.0	1.03377E-07	293.0	end	sm-149	10	0.0	9.02193E-08	293.0	end
sm-150	10	0.0	1.05008E-05	293.0	end	sm-150	10	0.0	1.74200E-05	293.0	end
sm-151	10	0.0	5.34741E-07	293.0	end	sm-151	10	0.0	6.39260E-07	293.0	end
sm-152	10	0.0	4.35752E-06	293.0	end	sm-152	10	0.0	6.43806E-06	293.0	end
eu-153	10	0.0	3.93163E-06	293.0	end	eu-153	10	0.0	7.60737E-06	293.0	end
gd-155	10	0.0	1.25724E-09	293.0	end	gd-155	10	0.0	3.03756E-09	293.0	end
u-234	10	0.0	4.91605E-06	293.0	end	u-234	10	0.0	3.30897E-06	293.0	end
u-235	10	0.0	3.16048E-04	293.0	end	u-235	10	0.0	1.21581E-04	293.0	end
u-236	10	0.0	1.05949E-04	293.0	end	u-236	10	0.0	1.26415E-04	293.0	end
u-238	10	0.0	2.15221E-02	293.0	end	u-238	10	0.0	2.11161E-02	293.0	end
np-237	10	0.0	9.33031E-06	293.0	end	np-237	10	0.0	1.68507E-05	293.0	end
pu-238	10	0.0	2.62984E-06	293.0	end	pu-238	10	0.0	8.55527E-06	293.0	end
pu-239	10	0.0	1.32863E-04	293.0	end	pu-239	10	0.0	1.32328E-04	293.0	end
pu-240	10	0.0	4.31944E-05	293.0	end	pu-240	10	0.0	6.27298E-05	293.0	end
pu-241	10	0.0	2.72534E-05	293.0	end	pu-241	10	0.0	3.92710E-05	293.0	end
pu-242	10	0.0	7.68866E-06	293.0	end	pu-242	10	0.0	2.37585E-05	293.0	end
am-241	10	0.0	7.00676E-07	293.0	end	am-241	10	0.0	1.22340E-06	293.0	end
am-243	10	0.0	1.18964E-06	293.0	end	am-243	10	0.0	5.41663E-06	293.0	end
o	10	0.0	4.58960E-02	293.0	end	o	10	0.0	4.58960E-02	293.0	end
mo-95	11	0.0	3.71022E-05	293.0	end	mo-95	11	0.0	6.12090E-05	293.0	end
tc-99	11	0.0	4.31635E-05	293.0	end	tc-99	11	0.0	6.60364E-05	293.0	end
ru-101	11	0.0	4.11680E-05	293.0	end	ru-101	11	0.0	6.79243E-05	293.0	end
rh-103	11	0.0	2.17288E-05	293.0	end	rh-103	11	0.0	3.20976E-05	293.0	end
ag-109	11	0.0	3.01133E-06	293.0	end	ag-109	11	0.0	6.15292E-06	293.0	end
cs-133	11	0.0	4.46009E-05	293.0	end	cs-133	11	0.0	6.63898E-05	293.0	end
nd-143	11	0.0	3.19401E-05	293.0	end	nd-143	11	0.0	4.08269E-05	293.0	end

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nd-145    11  0.0  2.58940E-05  293.0  end
sm-147    11  0.0  2.37580E-06  293.0  end
sm-149    11  0.0  1.03595E-07  293.0  end
sm-150    11  0.0  1.03265E-05  293.0  end
sm-151    11  0.0  5.31640E-07  293.0  end
sm-152    11  0.0  4.30100E-06  293.0  end
eu-153    11  0.0  3.84571E-06  293.0  end
gd-155    11  0.0  1.22334E-09  293.0  end
u-234     11  0.0  4.95812E-06  293.0  end
u-235     11  0.0  3.22255E-04  293.0  end
u-236     11  0.0  1.05095E-04  293.0  end
u-238     11  0.0  2.15307E-02  293.0  end
np-237    11  0.0  9.13701E-06  293.0  end
pu-238    11  0.0  2.52920E-06  293.0  end
pu-239    11  0.0  1.32580E-04  293.0  end
pu-240    11  0.0  4.25667E-05  293.0  end
pu-241    11  0.0  2.68115E-05  293.0  end
pu-242    11  0.0  7.40231E-06  293.0  end
am-241    11  0.0  6.82477E-07  293.0  end
am-243    11  0.0  1.12799E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  3.63734E-05  293.0  end
tc-99     12  0.0  4.24647E-05  293.0  end
ru-101    12  0.0  4.04227E-05  293.0  end
rh-103    12  0.0  2.13720E-05  293.0  end
ag-109    12  0.0  2.92939E-06  293.0  end
cs-133    12  0.0  4.39058E-05  293.0  end
nd-143    12  0.0  3.15532E-05  293.0  end
nd-145    12  0.0  2.54971E-05  293.0  end
sm-147    12  0.0  2.32256E-06  293.0  end
sm-149    12  0.0  1.03836E-07  293.0  end
sm-150    12  0.0  1.01227E-05  293.0  end
sm-151    12  0.0  5.27971E-07  293.0  end
sm-152    12  0.0  4.23447E-06  293.0  end
eu-153    12  0.0  3.74564E-06  293.0  end
gd-155    12  0.0  1.18433E-09  293.0  end
u-234     12  0.0  5.00751E-06  293.0  end
u-235     12  0.0  3.29615E-04  293.0  end
u-236     12  0.0  1.04069E-04  293.0  end
u-238     12  0.0  2.15407E-02  293.0  end
np-237    12  0.0  8.91104E-06  293.0  end
pu-238    12  0.0  2.41426E-06  293.0  end
pu-239    12  0.0  1.32218E-04  293.0  end
pu-240    12  0.0  4.18236E-05  293.0  end
pu-241    12  0.0  2.62856E-05  293.0  end
pu-242    12  0.0  7.07391E-06  293.0  end
am-241    12  0.0  6.61056E-07  293.0  end
am-243    12  0.0  1.05840E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  3.56166E-05  293.0  end
tc-99     13  0.0  4.17389E-05  293.0  end
ru-101    13  0.0  3.96526E-05  293.0  end
rh-103    13  0.0  2.09998E-05  293.0  end
ag-109    13  0.0  2.84526E-06  293.0  end
cs-133    13  0.0  4.31827E-05  293.0  end
nd-143    13  0.0  3.11452E-05  293.0  end
nd-145    13  0.0  2.50844E-05  293.0  end
sm-147    13  0.0  2.26709E-06  293.0  end
sm-149    13  0.0  1.04070E-07  293.0  end
sm-150    13  0.0  9.91201E-06  293.0  end
sm-151    13  0.0  5.24130E-07  293.0  end
sm-152    13  0.0  4.16521E-06  293.0  end
eu-153    13  0.0  3.64271E-06  293.0  end
gd-155    13  0.0  1.14474E-09  293.0  end
u-234     13  0.0  5.05879E-06  293.0  end
u-235     13  0.0  3.37337E-04  293.0  end
u-236     13  0.0  1.02977E-04  293.0  end
u-238     13  0.0  2.15511E-02  293.0  end
np-237    13  0.0  8.67768E-06  293.0  end
pu-238    13  0.0  2.29860E-06  293.0  end
pu-239    13  0.0  1.31808E-04  293.0  end
pu-240    13  0.0  4.10458E-05  293.0  end
pu-241    13  0.0  2.57321E-05  293.0  end
pu-242    13  0.0  6.74198E-06  293.0  end
am-241    13  0.0  6.38790E-07  293.0  end
am-243    13  0.0  9.89299E-07  293.0  end
o         13  0.0  4.58960E-02  293.0  end
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nd-145    11  0.0  3.85459E-05  293.0  end
sm-147    11  0.0  3.84357E-06  293.0  end
sm-149    11  0.0  9.05696E-08  293.0  end
sm-150    11  0.0  1.72731E-05  293.0  end
sm-151    11  0.0  6.37318E-07  293.0  end
sm-152    11  0.0  6.39579E-06  293.0  end
eu-153    11  0.0  7.52494E-06  293.0  end
gd-155    11  0.0  2.99063E-09  293.0  end
u-234     11  0.0  3.34231E-06  293.0  end
u-235     11  0.0  1.24735E-04  293.0  end
u-236     11  0.0  1.26254E-04  293.0  end
u-238     11  0.0  2.11266E-02  293.0  end
np-237    11  0.0  1.66955E-05  293.0  end
pu-238    11  0.0  8.39082E-06  293.0  end
pu-239    11  0.0  1.32485E-04  293.0  end
pu-240    11  0.0  6.24273E-05  293.0  end
pu-241    11  0.0  3.91285E-05  293.0  end
pu-242    11  0.0  2.33174E-05  293.0  end
am-241    11  0.0  1.21804E-06  293.0  end
am-243    11  0.0  5.28382E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  6.05774E-05  293.0  end
tc-99     12  0.0  6.54472E-05  293.0  end
ru-101    12  0.0  6.71636E-05  293.0  end
rh-103    12  0.0  3.18720E-05  293.0  end
ag-109    12  0.0  6.06172E-06  293.0  end
cs-133    12  0.0  6.58576E-05  293.0  end
nd-143    12  0.0  4.07041E-05  293.0  end
nd-145    12  0.0  3.82289E-05  293.0  end
sm-147    12  0.0  3.81610E-06  293.0  end
sm-149    12  0.0  9.10122E-08  293.0  end
sm-150    12  0.0  1.70919E-05  293.0  end
sm-151    12  0.0  6.34925E-07  293.0  end
sm-152    12  0.0  6.34352E-06  293.0  end
eu-153    12  0.0  7.42345E-06  293.0  end
gd-155    12  0.0  2.93373E-09  293.0  end
u-234     12  0.0  3.38349E-06  293.0  end
u-235     12  0.0  1.28685E-04  293.0  end
u-236     12  0.0  1.26040E-04  293.0  end
u-238     12  0.0  2.11393E-02  293.0  end
np-237    12  0.0  1.65004E-05  293.0  end
pu-238    12  0.0  8.19019E-06  293.0  end
pu-239    12  0.0  1.32679E-04  293.0  end
pu-240    12  0.0  6.20454E-05  293.0  end
pu-241    12  0.0  3.89470E-05  293.0  end
pu-242    12  0.0  2.27791E-05  293.0  end
am-241    12  0.0  1.21104E-06  293.0  end
am-243    12  0.0  5.12320E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  5.97211E-05  293.0  end
tc-99     13  0.0  6.46473E-05  293.0  end
ru-101    13  0.0  6.61380E-05  293.0  end
rh-103    13  0.0  3.15615E-05  293.0  end
ag-109    13  0.0  5.93872E-06  293.0  end
cs-133    13  0.0  6.51320E-05  293.0  end
nd-143    13  0.0  4.05272E-05  293.0  end
nd-145    13  0.0  3.77977E-05  293.0  end
sm-147    13  0.0  3.77769E-06  293.0  end
sm-149    13  0.0  9.15705E-08  293.0  end
sm-150    13  0.0  1.68457E-05  293.0  end
sm-151    13  0.0  6.31557E-07  293.0  end
sm-152    13  0.0  6.27260E-06  293.0  end
eu-153    13  0.0  7.28585E-06  293.0  end
gd-155    13  0.0  2.85644E-09  293.0  end
u-234     13  0.0  3.43952E-06  293.0  end
u-235     13  0.0  1.34152E-04  293.0  end
u-236     13  0.0  1.25719E-04  293.0  end
u-238     13  0.0  2.11563E-02  293.0  end
np-237    13  0.0  1.62400E-05  293.0  end
pu-238    13  0.0  7.92157E-06  293.0  end
pu-239    13  0.0  1.32930E-04  293.0  end
pu-240    13  0.0  6.15186E-05  293.0  end
pu-241    13  0.0  3.86844E-05  293.0  end
pu-242    13  0.0  2.20594E-05  293.0  end
am-241    13  0.0  1.20082E-06  293.0  end
am-243    13  0.0  4.90995E-06  293.0  end
o         13  0.0  4.58960E-02  293.0  end
```

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mo-95     14  0.0  3.44576E-05  293.0  end
tc-99     14  0.0  4.06272E-05  293.0  end
ru-101    14  0.0  3.84781E-05  293.0  end
rh-103    14  0.0  2.04246E-05  293.0  end
ag-109    14  0.0  2.71820E-06  293.0  end
cs-133    14  0.0  4.20714E-05  293.0  end
nd-143    14  0.0  3.05087E-05  293.0  end
nd-145    14  0.0  2.44504E-05  293.0  end
sm-147    14  0.0  2.18173E-06  293.0  end
sm-149    14  0.0  1.04399E-07  293.0  end
sm-150    14  0.0  9.59030E-06  293.0  end
sm-151    14  0.0  5.18167E-07  293.0  end
sm-152    14  0.0  4.05863E-06  293.0  end
eu-153    14  0.0  3.48682E-06  293.0  end
gd-155    14  0.0  1.08567E-09  293.0  end
u-234     14  0.0  5.13750E-06  293.0  end
u-235     14  0.0  3.49325E-04  293.0  end
u-236     14  0.0  1.01275E-04  293.0  end
u-238     14  0.0  2.15669E-02  293.0  end
np-237    14  0.0  8.32254E-06  293.0  end
pu-238    14  0.0  2.12847E-06  293.0  end
pu-239    14  0.0  1.31120E-04  293.0  end
pu-240    14  0.0  3.98435E-05  293.0  end
pu-241    14  0.0  2.48695E-05  293.0  end
pu-242    14  0.0  6.25093E-06  293.0  end
am-241    14  0.0  6.04673E-07  293.0  end
am-243    14  0.0  8.89528E-07  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  3.18747E-05  293.0  end
tc-99     15  0.0  3.81865E-05  293.0  end
ru-101    15  0.0  3.66371E-05  293.0  end
rh-103    15  0.0  2.00919E-05  293.0  end
ag-109    15  0.0  2.75461E-06  293.0  end
cs-133    15  0.0  3.94126E-05  293.0  end
nd-143    15  0.0  2.99492E-05  293.0  end
nd-145    15  0.0  2.29344E-05  293.0  end
sm-147    15  0.0  1.85309E-06  293.0  end
sm-149    15  0.0  1.56507E-07  293.0  end
sm-150    15  0.0  9.24455E-06  293.0  end
sm-151    15  0.0  7.06978E-07  293.0  end
sm-152    15  0.0  3.69315E-06  293.0  end
eu-153    15  0.0  3.42425E-06  293.0  end
gd-155    15  0.0  1.72412E-09  293.0  end
u-234     15  0.0  4.95257E-06  293.0  end
u-235     15  0.0  4.03591E-04  293.0  end
u-236     15  0.0  9.85388E-05  293.0  end
u-238     15  0.0  2.14923E-02  293.0  end
np-237    15  0.0  9.70838E-06  293.0  end
pu-238    15  0.0  2.57506E-06  293.0  end
pu-239    15  0.0  1.82032E-04  293.0  end
pu-240    15  0.0  4.25490E-05  293.0  end
pu-241    15  0.0  3.02743E-05  293.0  end
pu-242    15  0.0  5.81108E-06  293.0  end
am-241    15  0.0  7.32731E-07  293.0  end
am-243    15  0.0  9.59052E-07  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  2.92630E-05  293.0  end
tc-99     16  0.0  3.56726E-05  293.0  end
ru-101    16  0.0  3.39805E-05  293.0  end
rh-103    16  0.0  1.86627E-05  293.0  end
ag-109    16  0.0  2.46676E-06  293.0  end
cs-133    16  0.0  3.69003E-05  293.0  end
nd-143    16  0.0  2.82133E-05  293.0  end
nd-145    16  0.0  2.14914E-05  293.0  end
sm-147    16  0.0  1.68059E-06  293.0  end
sm-149    16  0.0  1.54781E-07  293.0  end
sm-150    16  0.0  8.50893E-06  293.0  end
sm-151    16  0.0  6.76677E-07  293.0  end
sm-152    16  0.0  3.46028E-06  293.0  end
eu-153    16  0.0  3.07522E-06  293.0  end
gd-155    16  0.0  1.48630E-09  293.0  end
u-234     16  0.0  5.14101E-06  293.0  end
u-235     16  0.0  4.29922E-04  293.0  end
u-236     16  0.0  9.44464E-05  293.0  end
u-238     16  0.0  2.15333E-02  293.0  end
np-237    16  0.0  8.74397E-06  293.0  end
pu-238    16  0.0  2.13179E-06  293.0  end
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mo-95     14  0.0  5.83173E-05  293.0  end
tc-99     14  0.0  6.33341E-05  293.0  end
ru-101    14  0.0  6.44712E-05  293.0  end
rh-103    14  0.0  3.10423E-05  293.0  end
ag-109    14  0.0  5.73898E-06  293.0  end
cs-133    14  0.0  6.39341E-05  293.0  end
nd-143    14  0.0  4.02110E-05  293.0  end
nd-145    14  0.0  3.70878E-05  293.0  end
sm-147    14  0.0  3.71195E-06  293.0  end
sm-149    14  0.0  9.22134E-08  293.0  end
sm-150    14  0.0  1.64405E-05  293.0  end
sm-151    14  0.0  6.25396E-07  293.0  end
sm-152    14  0.0  6.15690E-06  293.0  end
eu-153    14  0.0  7.06000E-06  293.0  end
gd-155    14  0.0  2.72474E-09  293.0  end
u-234     14  0.0  3.53182E-06  293.0  end
u-235     14  0.0  1.43388E-04  293.0  end
u-236     14  0.0  1.25122E-04  293.0  end
u-238     14  0.0  2.11834E-02  293.0  end
np-237    14  0.0  1.58527E-05  293.0  end
pu-238    14  0.0  7.48969E-06  293.0  end
pu-239    14  0.0  1.33284E-04  293.0  end
pu-240    14  0.0  6.06508E-05  293.0  end
pu-241    14  0.0  3.81956E-05  293.0  end
pu-242    14  0.0  2.09077E-05  293.0  end
am-241    14  0.0  1.18227E-06  293.0  end
am-243    14  0.0  4.56963E-06  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  5.44836E-05  293.0  end
tc-99     15  0.0  5.97506E-05  293.0  end
ru-101    15  0.0  6.13299E-05  293.0  end
rh-103    15  0.0  3.17026E-05  293.0  end
ag-109    15  0.0  5.61562E-06  293.0  end
cs-133    15  0.0  6.01334E-05  293.0  end
nd-143    15  0.0  4.30734E-05  293.0  end
nd-145    15  0.0  3.51086E-05  293.0  end
sm-147    15  0.0  3.17009E-06  293.0  end
sm-149    15  0.0  1.62569E-07  293.0  end
sm-150    15  0.0  1.58494E-05  293.0  end
sm-151    15  0.0  9.67307E-07  293.0  end
sm-152    15  0.0  5.58826E-06  293.0  end
eu-153    15  0.0  6.77780E-06  293.0  end
gd-155    15  0.0  5.01444E-09  293.0  end
u-234     15  0.0  3.43436E-06  293.0  end
u-235     15  0.0  2.14776E-04  293.0  end
u-236     15  0.0  1.22265E-04  293.0  end
u-238     15  0.0  2.10753E-02  293.0  end
np-237    15  0.0  1.84416E-05  293.0  end
pu-238    15  0.0  8.92522E-06  293.0  end
pu-239    15  0.0  2.08586E-04  293.0  end
pu-240    15  0.0  6.75419E-05  293.0  end
pu-241    15  0.0  5.17740E-05  293.0  end
pu-242    15  0.0  1.80557E-05  293.0  end
am-241    15  0.0  1.76066E-06  293.0  end
am-243    15  0.0  4.44685E-06  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  5.09290E-05  293.0  end
tc-99     16  0.0  5.63971E-05  293.0  end
ru-101    16  0.0  5.72361E-05  293.0  end
rh-103    16  0.0  2.99927E-05  293.0  end
ag-109    16  0.0  5.12974E-06  293.0  end
cs-133    16  0.0  5.70213E-05  293.0  end
nd-143    16  0.0  4.12493E-05  293.0  end
nd-145    16  0.0  3.32364E-05  293.0  end
sm-147    16  0.0  2.99597E-06  293.0  end
sm-149    16  0.0  1.62307E-07  293.0  end
sm-150    16  0.0  1.48009E-05  293.0  end
sm-151    16  0.0  9.26712E-07  293.0  end
sm-152    16  0.0  5.30372E-06  293.0  end
eu-153    16  0.0  6.22674E-06  293.0  end
gd-155    16  0.0  4.33744E-09  293.0  end
u-234     16  0.0  3.65669E-06  293.0  end
u-235     16  0.0  2.39857E-04  293.0  end
u-236     16  0.0  1.19951E-04  293.0  end
u-238     16  0.0  2.11489E-02  293.0  end
np-237    16  0.0  1.70778E-05  293.0  end
pu-238    16  0.0  7.61244E-06  293.0  end
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pu-239    16  0.0  1.76977E-04  293.0  end
pu-240    16  0.0  3.93257E-05  293.0  end
pu-241    16  0.0  2.74606E-05  293.0  end
pu-242    16  0.0  4.84553E-06  293.0  end
am-241    16  0.0  6.25484E-07  293.0  end
am-243    16  0.0  7.42792E-07  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  2.49846E-05  293.0  end
tc-99     17  0.0  3.15498E-05  293.0  end
ru-101    17  0.0  2.97112E-05  293.0  end
rh-103    17  0.0  1.62961E-05  293.0  end
ag-109    17  0.0  2.01934E-06  293.0  end
cs-133    17  0.0  3.27452E-05  293.0  end
nd-143    17  0.0  2.52787E-05  293.0  end
nd-145    17  0.0  1.91118E-05  293.0  end
sm-147    17  0.0  1.39790E-06  293.0  end
sm-149    17  0.0  1.51262E-07  293.0  end
sm-150    17  0.0  7.32690E-06  293.0  end
sm-151    17  0.0  6.27006E-07  293.0  end
sm-152    17  0.0  3.07161E-06  293.0  end
eu-153    17  0.0  2.53023E-06  293.0  end
gd-155    17  0.0  1.15135E-09  293.0  end
u-234     17  0.0  5.45399E-06  293.0  end
u-235     17  0.0  4.75122E-04  293.0  end
u-236     17  0.0  8.71458E-05  293.0  end
u-238     17  0.0  2.15984E-02  293.0  end
np-237    17  0.0  7.21537E-06  293.0  end
pu-238    17  0.0  1.51896E-06  293.0  end
pu-239    17  0.0  1.67460E-04  293.0  end
pu-240    17  0.0  3.39682E-05  293.0  end
pu-241    17  0.0  2.28112E-05  293.0  end
pu-242    17  0.0  3.46675E-06  293.0  end
am-241    17  0.0  4.63818E-07  293.0  end
am-243    17  0.0  4.63625E-07  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  1.73104E-05  293.0  end
tc-99     18  0.0  2.41222E-05  293.0  end
ru-101    18  0.0  2.22734E-05  293.0  end
rh-103    18  0.0  1.19898E-05  293.0  end
ag-109    18  0.0  1.29862E-06  293.0  end
cs-133    18  0.0  2.51558E-05  293.0  end
nd-143    18  0.0  1.97172E-05  293.0  end
nd-145    18  0.0  1.47806E-05  293.0  end
sm-147    18  0.0  9.06763E-07  293.0  end
sm-149    18  0.0  1.42348E-07  293.0  end
sm-150    18  0.0  5.28886E-06  293.0  end
sm-151    18  0.0  5.37314E-07  293.0  end
sm-152    18  0.0  2.34710E-06  293.0  end
eu-153    18  0.0  1.64874E-06  293.0  end
gd-155    18  0.0  7.01769E-10  293.0  end
u-234     18  0.0  6.02958E-06  293.0  end
u-235     18  0.0  5.63255E-04  293.0  end
u-236     18  0.0  7.20874E-05  293.0  end
u-238     18  0.0  2.17085E-02  293.0  end
np-237    18  0.0  4.70199E-06  293.0  end
pu-238    18  0.0  7.31742E-07  293.0  end
pu-239    18  0.0  1.45650E-04  293.0  end
pu-240    18  0.0  2.42397E-05  293.0  end
pu-241    18  0.0  1.46019E-05  293.0  end
pu-242    18  0.0  1.61382E-06  293.0  end
am-241    18  0.0  2.28391E-07  293.0  end
am-243    18  0.0  1.58691E-07  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  3.60489E-06  293.0  end
tc-99     19  0.0  9.62205E-06  293.0  end
ru-101    19  0.0  8.62330E-06  293.0  end
rh-103    19  0.0  3.72052E-06  293.0  end
ag-109    19  0.0  2.80964E-07  293.0  end
cs-133    19  0.0  1.00124E-05  293.0  end
nd-143    19  0.0  7.82217E-06  293.0  end
nd-145    19  0.0  6.11608E-06  293.0  end
sm-147    19  0.0  1.66025E-07  293.0  end
sm-149    19  0.0  1.12591E-07  293.0  end
sm-150    19  0.0  1.77893E-06  293.0  end
sm-151    19  0.0  3.39708E-07  293.0  end
sm-152    19  0.0  8.48281E-07  293.0  end
eu-153    19  0.0  4.06906E-07  293.0  end
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pu-239    16  0.0  2.05961E-04  293.0  end
pu-240    16  0.0  6.40563E-05  293.0  end
pu-241    16  0.0  4.88499E-05  293.0  end
pu-242    16  0.0  1.56865E-05  293.0  end
am-241    16  0.0  1.60170E-06  293.0  end
am-243    16  0.0  3.70170E-06  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  4.53387E-05  293.0  end
tc-99     17  0.0  5.10893E-05  293.0  end
ru-101    17  0.0  5.09628E-05  293.0  end
rh-103    17  0.0  2.72065E-05  293.0  end
ag-109    17  0.0  4.38946E-06  293.0  end
cs-133    17  0.0  5.20060E-05  293.0  end
nd-143    17  0.0  3.81946E-05  293.0  end
nd-145    17  0.0  3.02590E-05  293.0  end
sm-147    17  0.0  2.69260E-06  293.0  end
sm-149    17  0.0  1.61536E-07  293.0  end
sm-150    17  0.0  1.31508E-05  293.0  end
sm-151    17  0.0  8.62618E-07  293.0  end
sm-152    17  0.0  4.84635E-06  293.0  end
eu-153    17  0.0  5.37101E-06  293.0  end
gd-155    17  0.0  3.39934E-09  293.0  end
u-234     17  0.0  4.02008E-06  293.0  end
u-235     17  0.0  2.82758E-04  293.0  end
u-236     17  0.0  1.15231E-04  293.0  end
u-238     17  0.0  2.12574E-02  293.0  end
np-237    17  0.0  1.48982E-05  293.0  end
pu-238    17  0.0  5.78822E-06  293.0  end
pu-239    17  0.0  2.00871E-04  293.0  end
pu-240    17  0.0  5.82008E-05  293.0  end
pu-241    17  0.0  4.38693E-05  293.0  end
pu-242    17  0.0  1.22803E-05  293.0  end
am-241    17  0.0  1.34344E-06  293.0  end
am-243    17  0.0  2.68159E-06  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  3.42666E-05  293.0  end
tc-99     18  0.0  4.04857E-05  293.0  end
ru-101    18  0.0  3.91026E-05  293.0  end
rh-103    18  0.0  2.13892E-05  293.0  end
ag-109    18  0.0  3.02721E-06  293.0  end
cs-133    18  0.0  4.16939E-05  293.0  end
nd-143    18  0.0  3.15008E-05  293.0  end
nd-145    18  0.0  2.42500E-05  293.0  end
sm-147    18  0.0  2.00967E-06  293.0  end
sm-149    18  0.0  1.57841E-07  293.0  end
sm-150    18  0.0  9.92606E-06  293.0  end
sm-151    18  0.0  7.34702E-07  293.0  end
sm-152    18  0.0  3.90359E-06  293.0  end
eu-153    18  0.0  3.75341E-06  293.0  end
gd-155    18  0.0  1.96535E-09  293.0  end
u-234     18  0.0  4.78195E-06  293.0  end
u-235     18  0.0  3.80319E-04  293.0  end
u-236     18  0.0  1.02041E-04  293.0  end
u-238     18  0.0  2.14533E-02  293.0  end
np-237    18  0.0  1.06080E-05  293.0  end
pu-238    18  0.0  3.02951E-06  293.0  end
pu-239    18  0.0  1.86207E-04  293.0  end
pu-240    18  0.0  4.54577E-05  293.0  end
pu-241    18  0.0  3.28165E-05  293.0  end
pu-242    18  0.0  6.77733E-06  293.0  end
am-241    18  0.0  8.35494E-07  293.0  end
am-243    18  0.0  1.18983E-06  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  1.07992E-05  293.0  end
tc-99     19  0.0  1.76762E-05  293.0  end
ru-101    19  0.0  1.60668E-05  293.0  end
rh-103    19  0.0  8.25125E-06  293.0  end
ag-109    19  0.0  7.75062E-07  293.0  end
cs-133    19  0.0  1.84718E-05  293.0  end
nd-143    19  0.0  1.46035E-05  293.0  end
nd-145    19  0.0  1.09672E-05  293.0  end
sm-147    19  0.0  5.27112E-07  293.0  end
sm-149    19  0.0  1.31370E-07  293.0  end
sm-150    19  0.0  3.63945E-06  293.0  end
sm-151    19  0.0  4.57408E-07  293.0  end
sm-152    19  0.0  1.69108E-06  293.0  end
eu-153    19  0.0  1.00906E-06  293.0  end
```

```
 gd-155   19  0.0  2.38783E-10  293.0  end
 u-234    19  0.0  7.18904E-06  293.0  end
 u-235    19  0.0  7.63846E-04  293.0  end
 u-236    19  0.0  3.50434E-05  293.0  end
 u-238    19  0.0  2.18987E-02  293.0  end
 np-237   19  0.0  1.12639E-06  293.0  end
 pu-238   19  0.0  6.67749E-08  293.0  end
 pu-239   19  0.0  7.78525E-05  293.0  end
 pu-240   19  0.0  6.56349E-06  293.0  end
 pu-241   19  0.0  2.16806E-06  293.0  end
 pu-242   19  0.0  8.57529E-08  293.0  end
 am-241   19  0.0  1.30160E-08  293.0  end
 am-243   19  0.0  2.92719E-09  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id05225_b30.mip

```
 gd-155   19  0.0  4.44172E-10  293.0  end
 u-234    19  0.0  6.53976E-06  293.0  end
 u-235    19  0.0  6.47341E-04  293.0  end
 u-236    19  0.0  5.69246E-05  293.0  end
 u-238    19  0.0  2.17965E-02  293.0  end
 np-237   19  0.0  2.86069E-06  293.0  end
 pu-238   19  0.0  3.20752E-07  293.0  end
 pu-239   19  0.0  1.20509E-04  293.0  end
 pu-240   19  0.0  1.59776E-05  293.0  end
 pu-241   19  0.0  8.15522E-06  293.0  end
 pu-242   19  0.0  6.30115E-07  293.0  end
 am-241   19  0.0  9.26971E-08  293.0  end
 am-243   19  0.0  4.31533E-08  293.0  end
 o        19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id05225_b50.mip

File ed24_f01_id06270_b30.mip

```
 lfd.Nr.:   1 aus sha_alf.mod


 mo-95     1  0.0  4.67069E-06  293.0  end
 tc-99     1  0.0  1.09863E-05  293.0  end
 ru-101    1  0.0  9.76043E-06  293.0  end
 rh-103    1  0.0  4.33782E-06  293.0  end
 ag-109    1  0.0  2.96840E-07  293.0  end
 cs-133    1  0.0  1.14667E-05  293.0  end
 nd-143    1  0.0  9.00927E-06  293.0  end
 nd-145    1  0.0  6.97408E-06  293.0  end
 sm-147    1  0.0  2.19762E-07  293.0  end
 sm-149    1  0.0  9.14633E-08  293.0  end
 sm-150    1  0.0  2.03663E-06  293.0  end
 sm-151    1  0.0  3.17012E-07  293.0  end
 sm-152    1  0.0  1.00990E-06  293.0  end
 eu-153    1  0.0  4.53614E-07  293.0  end
 gd-155    1  0.0  2.04788E-10  293.0  end
 u-234     1  0.0  7.22023E-06  293.0  end
 u-235     1  0.0  7.38873E-04  293.0  end
 u-236     1  0.0  3.73654E-05  293.0  end
 u-238     1  0.0  2.19107E-02  293.0  end
 np-237    1  0.0  1.05409E-06  293.0  end
 pu-238    1  0.0  6.33352E-08  293.0  end
 pu-239    1  0.0  6.66489E-05  293.0  end
 pu-240    1  0.0  6.76284E-06  293.0  end
 pu-241    1  0.0  2.13231E-06  293.0  end
 pu-242    1  0.0  1.00259E-07  293.0  end
 am-241    1  0.0  1.44253E-08  293.0  end
 am-243    1  0.0  3.04791E-09  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  2.12313E-05  293.0  end
 tc-99     2  0.0  2.79087E-05  293.0  end
 ru-101    2  0.0  2.55954E-05  293.0  end
 rh-103    2  0.0  1.36186E-05  293.0  end
 ag-109    2  0.0  1.43798E-06  293.0  end
 cs-133    2  0.0  2.91472E-05  293.0  end
 nd-143    2  0.0  2.22842E-05  293.0  end
 nd-145    2  0.0  1.70912E-05  293.0  end
 sm-147    2  0.0  1.21594E-06  293.0  end
 sm-149    2  0.0  1.04634E-07  293.0  end
 sm-150    2  0.0  6.07782E-06  293.0  end
 sm-151    2  0.0  4.44308E-07  293.0  end
 sm-152    2  0.0  2.80210E-06  293.0  end
 eu-153    2  0.0  1.89643E-06  293.0  end
 gd-155    2  0.0  5.57124E-10  293.0  end
 u-234     2  0.0  6.03439E-06  293.0  end
 u-235     2  0.0  4.99519E-04  293.0  end
 u-236     2  0.0  7.82335E-05  293.0  end
 u-238     2  0.0  2.17298E-02  293.0  end
 np-237    2  0.0  4.56568E-06  293.0  end
 pu-238    2  0.0  7.41492E-07  293.0  end
 pu-239    2  0.0  1.16328E-04  293.0  end
```

File ed24_f01_id06270_b50.mip

```
 lfd.Nr.:   2 aus sha_alf.mod


 mo-95     1  0.0  1.26482E-05  293.0  end
 tc-99     1  0.0  1.95368E-05  293.0  end
 ru-101    1  0.0  1.75918E-05  293.0  end
 rh-103    1  0.0  9.00247E-06  293.0  end
 ag-109    1  0.0  7.84850E-07  293.0  end
 cs-133    1  0.0  2.04575E-05  293.0  end
 nd-143    1  0.0  1.60256E-05  293.0  end
 nd-145    1  0.0  1.21365E-05  293.0  end
 sm-147    1  0.0  6.53922E-07  293.0  end
 sm-149    1  0.0  1.00426E-07  293.0  end
 sm-150    1  0.0  3.97195E-06  293.0  end
 sm-151    1  0.0  3.89219E-07  293.0  end
 sm-152    1  0.0  1.93048E-06  293.0  end
 eu-153    1  0.0  1.07424E-06  293.0  end
 gd-155    1  0.0  3.43221E-10  293.0  end
 u-234     1  0.0  6.62234E-06  293.0  end
 u-235     1  0.0  6.11882E-04  293.0  end
 u-236     1  0.0  5.95161E-05  293.0  end
 u-238     1  0.0  2.18235E-02  293.0  end
 np-237    1  0.0  2.56224E-06  293.0  end
 pu-238    1  0.0  2.82537E-07  293.0  end
 pu-239    1  0.0  9.73220E-05  293.0  end
 pu-240    1  0.0  1.57889E-05  293.0  end
 pu-241    1  0.0  7.44622E-06  293.0  end
 pu-242    1  0.0  6.91114E-07  293.0  end
 am-241    1  0.0  9.13615E-08  293.0  end
 am-243    1  0.0  4.11972E-08  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  3.98296E-05  293.0  end
 tc-99     2  0.0  4.57776E-05  293.0  end
 ru-101    2  0.0  4.39881E-05  293.0  end
 rh-103    2  0.0  2.30492E-05  293.0  end
 ag-109    2  0.0  3.32577E-06  293.0  end
 cs-133    2  0.0  4.71892E-05  293.0  end
 nd-143    2  0.0  3.33345E-05  293.0  end
 nd-145    2  0.0  2.73747E-05  293.0  end
 sm-147    2  0.0  2.57287E-06  293.0  end
 sm-149    2  0.0  1.02568E-07  293.0  end
 sm-150    2  0.0  1.10964E-05  293.0  end
 sm-151    2  0.0  5.45081E-07  293.0  end
 sm-152    2  0.0  4.54846E-06  293.0  end
 eu-153    2  0.0  4.22833E-06  293.0  end
 gd-155    2  0.0  1.37673E-09  293.0  end
 u-234     2  0.0  4.77306E-06  293.0  end
 u-235     2  0.0  2.95379E-04  293.0  end
 u-236     2  0.0  1.08742E-04  293.0  end
 u-238     2  0.0  2.14917E-02  293.0  end
 np-237    2  0.0  9.99246E-06  293.0  end
 pu-238    2  0.0  2.99116E-06  293.0  end
 pu-239    2  0.0  1.33676E-04  293.0  end
```

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pu-240    2  0.0  2.54122E-05  293.0  end       pu-240    2  0.0  4.52922E-05  293.0  end
pu-241    2  0.0  1.42574E-05  293.0  end       pu-241    2  0.0  2.87132E-05  293.0  end
pu-242    2  0.0  2.09726E-06  293.0  end       pu-242    2  0.0  8.70806E-06  293.0  end
am-241    2  0.0  2.49228E-07  293.0  end       am-241    2  0.0  7.61991E-07  293.0  end
am-243    2  0.0  1.91755E-07  293.0  end       am-243    2  0.0  1.41614E-06  293.0  end
o         2  0.0  4.58960E-02  293.0  end       o         2  0.0  4.58960E-02  293.0  end
mo-95     3  0.0  2.90427E-05  293.0  end       mo-95     3  0.0  5.06994E-05  293.0  end
tc-99     3  0.0  3.54266E-05  293.0  end       tc-99     3  0.0  5.61459E-05  293.0  end
ru-101    3  0.0  3.30957E-05  293.0  end       ru-101    3  0.0  5.57179E-05  293.0  end
rh-103    3  0.0  1.76880E-05  293.0  end       rh-103    3  0.0  2.79821E-05  293.0  end
ag-109    3  0.0  2.15539E-06  293.0  end       ag-109    3  0.0  4.69054E-06  293.0  end
cs-133    3  0.0  3.68325E-05  293.0  end       cs-133    3  0.0  5.72281E-05  293.0  end
nd-143    3  0.0  2.73465E-05  293.0  end       nd-143    3  0.0  3.79639E-05  293.0  end
nd-145    3  0.0  2.14648E-05  293.0  end       nd-145    3  0.0  3.31608E-05  293.0  end
sm-147    3  0.0  1.78074E-06  293.0  end       sm-147    3  0.0  3.29644E-06  293.0  end
sm-149    3  0.0  1.05311E-07  293.0  end       sm-149    3  0.0  9.68565E-08  293.0  end
sm-150    3  0.0  8.11454E-06  293.0  end       sm-150    3  0.0  1.42273E-05  293.0  end
sm-151    3  0.0  4.89233E-07  293.0  end       sm-151    3  0.0  5.94146E-07  293.0  end
sm-152    3  0.0  3.55372E-06  293.0  end       sm-152    3  0.0  5.50897E-06  293.0  end
eu-153    3  0.0  2.79184E-06  293.0  end       eu-153    3  0.0  5.85408E-06  293.0  end
gd-155    3  0.0  8.37506E-10  293.0  end       gd-155    3  0.0  2.10197E-09  293.0  end
u-234     3  0.0  5.50475E-06  293.0  end       u-234     3  0.0  4.03888E-06  293.0  end
u-235     3  0.0  4.07826E-04  293.0  end       u-235     3  0.0  1.99381E-04  293.0  end
u-236     3  0.0  9.26287E-05  293.0  end       u-236     3  0.0  1.20224E-04  293.0  end
u-238     3  0.0  2.16368E-02  293.0  end       u-238     3  0.0  2.13218E-02  293.0  end
np-237    3  0.0  6.71084E-06  293.0  end       np-237    3  0.0  1.34780E-05  293.0  end
pu-238    3  0.0  1.44346E-06  293.0  end       pu-238    3  0.0  5.34761E-06  293.0  end
pu-239    3  0.0  1.26732E-04  293.0  end       pu-239    3  0.0  1.34721E-04  293.0  end
pu-240    3  0.0  3.40627E-05  293.0  end       pu-240    3  0.0  5.50798E-05  293.0  end
pu-241    3  0.0  2.06501E-05  293.0  end       pu-241    3  0.0  3.50511E-05  293.0  end
pu-242    3  0.0  4.23479E-06  293.0  end       pu-242    3  0.0  1.51762E-05  293.0  end
am-241    3  0.0  4.48617E-07  293.0  end       am-241    3  0.0  1.04439E-06  293.0  end
am-243    3  0.0  5.14189E-07  293.0  end       am-243    3  0.0  2.99423E-06  293.0  end
o         3  0.0  4.58960E-02  293.0  end       o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  3.66247E-05  293.0  end       mo-95     4  0.0  5.96712E-05  293.0  end
tc-99     4  0.0  4.27056E-05  293.0  end       tc-99     4  0.0  6.46007E-05  293.0  end
ru-101    4  0.0  4.06791E-05  293.0  end       ru-101    4  0.0  6.60785E-05  293.0  end
rh-103    4  0.0  2.14951E-05  293.0  end       rh-103    4  0.0  3.15433E-05  293.0  end
ag-109    4  0.0  2.95753E-06  293.0  end       ag-109    4  0.0  5.93158E-06  293.0  end
cs-133    4  0.0  4.41455E-05  293.0  end       cs-133    4  0.0  6.50896E-05  293.0  end
nd-143    4  0.0  3.16872E-05  293.0  end       nd-143    4  0.0  4.05165E-05  293.0  end
nd-145    4  0.0  2.56340E-05  293.0  end       nd-145    4  0.0  3.77725E-05  293.0  end
sm-147    4  0.0  2.34093E-06  293.0  end       sm-147    4  0.0  3.77541E-06  293.0  end
sm-149    4  0.0  1.03755E-07  293.0  end       sm-149    4  0.0  9.15997E-08  293.0  end
sm-150    4  0.0  1.01928E-05  293.0  end       sm-150    4  0.0  1.68313E-05  293.0  end
sm-151    4  0.0  5.29238E-07  293.0  end       sm-151    4  0.0  6.31352E-07  293.0  end
sm-152    4  0.0  4.25742E-06  293.0  end       sm-152    4  0.0  6.26848E-06  293.0  end
eu-153    4  0.0  3.78002E-06  293.0  end       eu-153    4  0.0  7.27784E-06  293.0  end
gd-155    4  0.0  1.19767E-09  293.0  end       gd-155    4  0.0  2.85189E-09  293.0  end
u-234     4  0.0  4.99050E-06  293.0  end       u-234     4  0.0  3.44279E-06  293.0  end
u-235     4  0.0  3.27069E-04  293.0  end       u-235     4  0.0  1.34474E-04  293.0  end
u-236     4  0.0  1.04426E-04  293.0  end       u-236     4  0.0  1.25700E-04  293.0  end
u-238     4  0.0  2.15373E-02  293.0  end       u-238     4  0.0  2.11573E-02  293.0  end
np-237    4  0.0  8.98879E-06  293.0  end       np-237    4  0.0  1.62253E-05  293.0  end
pu-238    4  0.0  2.45348E-06  293.0  end       pu-238    4  0.0  7.90604E-06  293.0  end
pu-239    4  0.0  1.32347E-04  293.0  end       pu-239    4  0.0  1.32944E-04  293.0  end
pu-240    4  0.0  4.20805E-05  293.0  end       pu-240    4  0.0  6.14878E-05  293.0  end
pu-241    4  0.0  2.64677E-05  293.0  end       pu-241    4  0.0  3.86683E-05  293.0  end
pu-242    4  0.0  7.18613E-06  293.0  end       pu-242    4  0.0  2.20178E-05  293.0  end
am-241    4  0.0  6.68443E-07  293.0  end       am-241    4  0.0  1.20020E-06  293.0  end
am-243    4  0.0  1.08205E-06  293.0  end       am-243    4  0.0  4.89767E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end       o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.87783E-05  293.0  end       mo-95     5  0.0  6.23557E-05  293.0  end
tc-99     5  0.0  4.47706E-05  293.0  end       tc-99     5  0.0  6.71035E-05  293.0  end
ru-101    5  0.0  4.28954E-05  293.0  end       ru-101    5  0.0  6.93149E-05  293.0  end
rh-103    5  0.0  2.25436E-05  293.0  end       rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end       ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end       cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end       nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end       nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end       sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end       sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end       sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end       sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end       sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end       eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end       gd-155    5  0.0  3.09657E-09  293.0  end
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u-234      5  0.0  4.84439E-06  293.0  end
u-235      5  0.0  3.05613E-04  293.0  end
u-236      5  0.0  1.07369E-04  293.0  end
u-238      5  0.0  2.15068E-02  293.0  end
np-237     5  0.0  9.66112E-06  293.0  end
pu-238     5  0.0  2.80716E-06  293.0  end
pu-239     5  0.0  1.33299E-04  293.0  end
pu-240     5  0.0  4.42526E-05  293.0  end
pu-241     5  0.0  2.79931E-05  293.0  end
pu-242     5  0.0  8.19047E-06  293.0  end
am-241     5  0.0  7.31520E-07  293.0  end
am-243     5  0.0  1.29979E-06  293.0  end
o          5  0.0  4.58960E-02  293.0  end
mo-95      6  0.0  3.99245E-05  293.0  end
tc-99      6  0.0  4.58684E-05  293.0  end
ru-101     6  0.0  4.40871E-05  293.0  end
rh-103     6  0.0  2.30946E-05  293.0  end
ag-109     6  0.0  3.33693E-06  293.0  end
cs-133     6  0.0  4.72788E-05  293.0  end
nd-143     6  0.0  3.33814E-05  293.0  end
nd-145     6  0.0  2.74260E-05  293.0  end
sm-147     6  0.0  2.57964E-06  293.0  end
sm-149     6  0.0  1.02528E-07  293.0  end
sm-150     6  0.0  1.11233E-05  293.0  end
sm-151     6  0.0  5.45540E-07  293.0  end
sm-152     6  0.0  4.55702E-06  293.0  end
eu-153     6  0.0  4.24185E-06  293.0  end
gd-155     6  0.0  1.38227E-09  293.0  end
u-234      6  0.0  4.76663E-06  293.0  end
u-235      6  0.0  2.94463E-04  293.0  end
u-236      6  0.0  1.08863E-04  293.0  end
u-238      6  0.0  2.14903E-02  293.0  end
np-237     6  0.0  1.00225E-05  293.0  end
pu-238     6  0.0  3.00813E-06  293.0  end
pu-239     6  0.0  1.33708E-04  293.0  end
pu-240     6  0.0  4.53853E-05  293.0  end
pu-241     6  0.0  2.87773E-05  293.0  end
pu-242     6  0.0  8.75567E-06  293.0  end
am-241     6  0.0  7.64727E-07  293.0  end
am-243     6  0.0  1.42697E-06  293.0  end
o          6  0.0  4.58960E-02  293.0  end
mo-95      7  0.0  4.03020E-05  293.0  end
tc-99      7  0.0  4.62299E-05  293.0  end
ru-101     7  0.0  4.44816E-05  293.0  end
rh-103     7  0.0  2.32748E-05  293.0  end
ag-109     7  0.0  3.38145E-06  293.0  end
cs-133     7  0.0  4.76350E-05  293.0  end
nd-143     7  0.0  3.35671E-05  293.0  end
nd-145     7  0.0  2.76300E-05  293.0  end
sm-147     7  0.0  2.60653E-06  293.0  end
sm-149     7  0.0  1.02369E-07  293.0  end
sm-150     7  0.0  1.12305E-05  293.0  end
sm-151     7  0.0  5.47362E-07  293.0  end
sm-152     7  0.0  4.59108E-06  293.0  end
eu-153     7  0.0  4.29579E-06  293.0  end
gd-155     7  0.0  1.40447E-09  293.0  end
u-234      7  0.0  4.74102E-06  293.0  end
u-235      7  0.0  2.90831E-04  293.0  end
u-236      7  0.0  1.09344E-04  293.0  end
u-238      7  0.0  2.14850E-02  293.0  end
np-237     7  0.0  1.01420E-05  293.0  end
pu-238     7  0.0  3.07627E-06  293.0  end
pu-239     7  0.0  1.33828E-04  293.0  end
pu-240     7  0.0  4.57545E-05  293.0  end
pu-241     7  0.0  2.90311E-05  293.0  end
pu-242     7  0.0  8.94661E-06  293.0  end
am-241     7  0.0  7.75585E-07  293.0  end
am-243     7  0.0  1.47055E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.95792E-05  293.0  end
tc-99      8  0.0  4.55378E-05  293.0  end
ru-101     8  0.0  4.37271E-05  293.0  end
rh-103     8  0.0  2.29293E-05  293.0  end
ag-109     8  0.0  3.29641E-06  293.0  end
cs-133     8  0.0  4.69526E-05  293.0  end
nd-143     8  0.0  3.32102E-05  293.0  end
nd-145     8  0.0  2.72393E-05  293.0  end
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u-234      5  0.0  3.26786E-06  293.0  end
u-235      5  0.0  1.17748E-04  293.0  end
u-236      5  0.0  1.26596E-04  293.0  end
u-238      5  0.0  2.11030E-02  293.0  end
np-237     5  0.0  1.70381E-05  293.0  end
pu-238     5  0.0  8.76042E-06  293.0  end
pu-239     5  0.0  1.32133E-04  293.0  end
pu-240     5  0.0  6.30944E-05  293.0  end
pu-241     5  0.0  3.94419E-05  293.0  end
pu-242     5  0.0  2.43086E-05  293.0  end
am-241     5  0.0  1.22961E-06  293.0  end
am-243     5  0.0  5.58383E-06  293.0  end
o          5  0.0  4.58960E-02  293.0  end
mo-95      6  0.0  6.36571E-05  293.0  end
tc-99      6  0.0  6.83111E-05  293.0  end
ru-101     6  0.0  7.09080E-05  293.0  end
rh-103     6  0.0  3.29433E-05  293.0  end
ag-109     6  0.0  6.50953E-06  293.0  end
cs-133     6  0.0  6.84264E-05  293.0  end
nd-143     6  0.0  4.12433E-05  293.0  end
nd-145     6  0.0  3.97662E-05  293.0  end
sm-147     6  0.0  3.94272E-06  293.0  end
sm-149     6  0.0  8.89642E-08  293.0  end
sm-150     6  0.0  1.79721E-05  293.0  end
sm-151     6  0.0  6.46598E-07  293.0  end
sm-152     6  0.0  6.59633E-06  293.0  end
eu-153     6  0.0  7.91861E-06  293.0  end
gd-155     6  0.0  3.22016E-09  293.0  end
u-234      6  0.0  3.18388E-06  293.0  end
u-235      6  0.0  1.10104E-04  293.0  end
u-236      6  0.0  1.26903E-04  293.0  end
u-238      6  0.0  2.10755E-02  293.0  end
np-237     6  0.0  1.74145E-05  293.0  end
pu-238     6  0.0  9.18775E-06  293.0  end
pu-239     6  0.0  1.31720E-04  293.0  end
pu-240     6  0.0  6.38149E-05  293.0  end
pu-241     6  0.0  3.97716E-05  293.0  end
pu-242     6  0.0  2.54552E-05  293.0  end
am-241     6  0.0  1.24098E-06  293.0  end
am-243     6  0.0  5.93717E-06  293.0  end
o          6  0.0  4.58960E-02  293.0  end
mo-95      7  0.0  6.41949E-05  293.0  end
tc-99      7  0.0  6.88092E-05  293.0  end
ru-101     7  0.0  7.15712E-05  293.0  end
rh-103     7  0.0  3.31227E-05  293.0  end
ag-109     7  0.0  6.58854E-06  293.0  end
cs-133     7  0.0  6.88684E-05  293.0  end
nd-143     7  0.0  4.13220E-05  293.0  end
nd-145     7  0.0  4.00320E-05  293.0  end
sm-147     7  0.0  3.96292E-06  293.0  end
sm-149     7  0.0  8.86158E-08  293.0  end
sm-150     7  0.0  1.81246E-05  293.0  end
sm-151     7  0.0  6.48610E-07  293.0  end
sm-152     7  0.0  6.64004E-06  293.0  end
eu-153     7  0.0  8.00504E-06  293.0  end
gd-155     7  0.0  3.27190E-09  293.0  end
u-234      7  0.0  3.14936E-06  293.0  end
u-235      7  0.0  1.07033E-04  293.0  end
u-236      7  0.0  1.27003E-04  293.0  end
u-238      7  0.0  2.10638E-02  293.0  end
np-237     7  0.0  1.75686E-05  293.0  end
pu-238     7  0.0  9.36658E-06  293.0  end
pu-239     7  0.0  1.31543E-04  293.0  end
pu-240     7  0.0  6.41029E-05  293.0  end
pu-241     7  0.0  3.98988E-05  293.0  end
pu-242     7  0.0  2.59358E-05  293.0  end
am-241     7  0.0  1.24514E-06  293.0  end
am-243     7  0.0  6.08700E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.35416E-05  293.0  end
tc-99      8  0.0  6.82041E-05  293.0  end
ru-101     8  0.0  7.07660E-05  293.0  end
rh-103     8  0.0  3.29044E-05  293.0  end
ag-109     8  0.0  6.49260E-06  293.0  end
cs-133     8  0.0  6.83313E-05  293.0  end
nd-143     8  0.0  4.12258E-05  293.0  end
nd-145     8  0.0  3.97090E-05  293.0  end
```

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sm-147    8  0.0  2.55497E-06  293.0  end
sm-149    8  0.0  1.02671E-07  293.0  end
sm-150    8  0.0  1.10254E-05  293.0  end
sm-151    8  0.0  5.43866E-07  293.0  end
sm-152    8  0.0  4.52584E-06  293.0  end
eu-153    8  0.0  4.19271E-06  293.0  end
gd-155    8  0.0  1.36216E-09  293.0  end
u-234     8  0.0  4.79005E-06  293.0  end
u-235     8  0.0  2.97803E-04  293.0  end
u-236     8  0.0  1.08419E-04  293.0  end
u-238     8  0.0  2.14952E-02  293.0  end
np-237    8  0.0  9.91337E-06  293.0  end
pu-238    8  0.0  2.94667E-06  293.0  end
pu-239    8  0.0  1.33592E-04  293.0  end
pu-240    8  0.0  4.50459E-05  293.0  end
pu-241    8  0.0  2.85432E-05  293.0  end
pu-242    8  0.0  8.58315E-06  293.0  end
am-241    8  0.0  7.54760E-07  293.0  end
am-243    8  0.0  1.38782E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  3.85161E-05  293.0  end
tc-99     9  0.0  4.45193E-05  293.0  end
ru-101    9  0.0  4.26241E-05  293.0  end
rh-103    9  0.0  2.24167E-05  293.0  end
ag-109    9  0.0  3.17286E-06  293.0  end
cs-133    9  0.0  4.59459E-05  293.0  end
nd-143    9  0.0  3.26739E-05  293.0  end
nd-145    9  0.0  2.66628E-05  293.0  end
sm-147    9  0.0  2.47847E-06  293.0  end
sm-149    9  0.0  1.03087E-07  293.0  end
sm-150    9  0.0  1.07246E-05  293.0  end
sm-151    9  0.0  5.38669E-07  293.0  end
sm-152    9  0.0  4.42961E-06  293.0  end
eu-153    9  0.0  4.04254E-06  293.0  end
gd-155    9  0.0  1.30144E-09  293.0  end
u-234     9  0.0  4.86219E-06  293.0  end
u-235     9  0.0  3.08189E-04  293.0  end
u-236     9  0.0  1.07020E-04  293.0  end
u-238     9  0.0  2.15106E-02  293.0  end
np-237    9  0.0  9.57877E-06  293.0  end
pu-238    9  0.0  2.76242E-06  293.0  end
pu-239    9  0.0  1.33196E-04  293.0  end
pu-240    9  0.0  4.39911E-05  293.0  end
pu-241    9  0.0  2.78109E-05  293.0  end
pu-242    9  0.0  8.06416E-06  293.0  end
am-241    9  0.0  7.23880E-07  293.0  end
am-243    9  0.0  1.27181E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  3.77225E-05  293.0  end
tc-99    10  0.0  4.37585E-05  293.0  end
ru-101   10  0.0  4.18054E-05  293.0  end
rh-103   10  0.0  2.20313E-05  293.0  end
ag-109   10  0.0  3.08180E-06  293.0  end
cs-133   10  0.0  4.51918E-05  293.0  end
nd-143   10  0.0  3.22648E-05  293.0  end
nd-145   10  0.0  2.62314E-05  293.0  end
sm-147   10  0.0  2.42095E-06  293.0  end
sm-149   10  0.0  1.03377E-07  293.0  end
sm-150   10  0.0  1.05008E-05  293.0  end
sm-151   10  0.0  5.34741E-07  293.0  end
sm-152   10  0.0  4.35752E-06  293.0  end
eu-153   10  0.0  3.93163E-06  293.0  end
gd-155   10  0.0  1.25724E-09  293.0  end
u-234    10  0.0  4.91605E-06  293.0  end
u-235    10  0.0  3.16048E-04  293.0  end
u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
```

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sm-147    8  0.0  3.93831E-06  293.0  end
sm-149    8  0.0  8.90389E-08  293.0  end
sm-150    8  0.0  1.79393E-05  293.0  end
sm-151    8  0.0  6.46165E-07  293.0  end
sm-152    8  0.0  6.58693E-06  293.0  end
eu-153    8  0.0  7.90004E-06  293.0  end
gd-155    8  0.0  3.20910E-09  293.0  end
u-234     8  0.0  3.19131E-06  293.0  end
u-235     8  0.0  1.10770E-04  293.0  end
u-236     8  0.0  1.26880E-04  293.0  end
u-238     8  0.0  2.10779E-02  293.0  end
np-237    8  0.0  1.73813E-05  293.0  end
pu-238    8  0.0  9.14952E-06  293.0  end
pu-239    8  0.0  1.31758E-04  293.0  end
pu-240    8  0.0  6.37523E-05  293.0  end
pu-241    8  0.0  3.97436E-05  293.0  end
pu-242    8  0.0  2.53525E-05  293.0  end
am-241    8  0.0  1.24005E-06  293.0  end
am-243    8  0.0  5.90529E-06  293.0  end
o         8  0.0  4.58960E-02  293.0  end
mo-95     9  0.0  6.25017E-05  293.0  end
tc-99     9  0.0  6.72392E-05  293.0  end
ru-101    9  0.0  6.94929E-05  293.0  end
rh-103    9  0.0  3.25501E-05  293.0  end
ag-109    9  0.0  6.34060E-06  293.0  end
cs-133    9  0.0  6.74704E-05  293.0  end
nd-143    9  0.0  4.10587E-05  293.0  end
nd-145    9  0.0  3.91922E-05  293.0  end
sm-147    9  0.0  3.89739E-06  293.0  end
sm-149    9  0.0  8.97077E-08  293.0  end
sm-150    9  0.0  1.76431E-05  293.0  end
sm-151    9  0.0  6.42227E-07  293.0  end
sm-152    9  0.0  6.50205E-06  293.0  end
eu-153    9  0.0  7.73280E-06  293.0  end
gd-155    9  0.0  3.11030E-09  293.0  end
u-234     9  0.0  3.25841E-06  293.0  end
u-235     9  0.0  1.16875E-04  293.0  end
u-236     9  0.0  1.26635E-04  293.0  end
u-238     9  0.0  2.10999E-02  293.0  end
np-237    9  0.0  1.70808E-05  293.0  end
pu-238    9  0.0  8.80797E-06  293.0  end
pu-239    9  0.0  1.32088E-04  293.0  end
pu-240    9  0.0  6.31770E-05  293.0  end
pu-241    9  0.0  3.94804E-05  293.0  end
pu-242    9  0.0  2.44361E-05  293.0  end
am-241    9  0.0  1.23098E-06  293.0  end
am-243    9  0.0  5.62282E-06  293.0  end
o         9  0.0  4.58960E-02  293.0  end
mo-95    10  0.0  6.17218E-05  293.0  end
tc-99    10  0.0  6.65140E-05  293.0  end
ru-101   10  0.0  6.85447E-05  293.0  end
rh-103   10  0.0  3.22787E-05  293.0  end
ag-109   10  0.0  6.22720E-06  293.0  end
cs-133   10  0.0  6.68198E-05  293.0  end
nd-143   10  0.0  4.09220E-05  293.0  end
nd-145   10  0.0  3.88028E-05  293.0  end
sm-147   10  0.0  3.86531E-06  293.0  end
sm-149   10  0.0  9.02193E-08  293.0  end
sm-150   10  0.0  1.74200E-05  293.0  end
sm-151   10  0.0  6.39260E-07  293.0  end
sm-152   10  0.0  6.43806E-06  293.0  end
eu-153   10  0.0  7.60737E-06  293.0  end
gd-155   10  0.0  3.03756E-09  293.0  end
u-234    10  0.0  3.30897E-06  293.0  end
u-235    10  0.0  1.21581E-04  293.0  end
u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
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tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
u-235    11  0.0  3.22255E-04  293.0  end
u-236    11  0.0  1.05095E-04  293.0  end
u-238    11  0.0  2.15307E-02  293.0  end
np-237   11  0.0  9.13701E-06  293.0  end
pu-238   11  0.0  2.52920E-06  293.0  end
pu-239   11  0.0  1.32580E-04  293.0  end
pu-240   11  0.0  4.25667E-05  293.0  end
pu-241   11  0.0  2.68115E-05  293.0  end
pu-242   11  0.0  7.40231E-06  293.0  end
am-241   11  0.0  6.82477E-07  293.0  end
am-243   11  0.0  1.12799E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  3.63734E-05  293.0  end
tc-99    12  0.0  4.24647E-05  293.0  end
ru-101   12  0.0  4.04227E-05  293.0  end
rh-103   12  0.0  2.13720E-05  293.0  end
ag-109   12  0.0  2.92939E-06  293.0  end
cs-133   12  0.0  4.39058E-05  293.0  end
nd-143   12  0.0  3.15532E-05  293.0  end
nd-145   12  0.0  2.54971E-05  293.0  end
sm-147   12  0.0  2.32256E-06  293.0  end
sm-149   12  0.0  1.03836E-07  293.0  end
sm-150   12  0.0  1.01227E-05  293.0  end
sm-151   12  0.0  5.27971E-07  293.0  end
sm-152   12  0.0  4.23447E-06  293.0  end
eu-153   12  0.0  3.74564E-06  293.0  end
gd-155   12  0.0  1.18433E-09  293.0  end
u-234    12  0.0  5.00751E-06  293.0  end
u-235    12  0.0  3.29615E-04  293.0  end
u-236    12  0.0  1.04069E-04  293.0  end
u-238    12  0.0  2.15407E-02  293.0  end
np-237   12  0.0  8.91104E-06  293.0  end
pu-238   12  0.0  2.41426E-06  293.0  end
pu-239   12  0.0  1.32218E-04  293.0  end
pu-240   12  0.0  4.18236E-05  293.0  end
pu-241   12  0.0  2.62856E-05  293.0  end
pu-242   12  0.0  7.07391E-06  293.0  end
am-241   12  0.0  6.61056E-07  293.0  end
am-243   12  0.0  1.05840E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  3.56166E-05  293.0  end
tc-99    13  0.0  4.17389E-05  293.0  end
ru-101   13  0.0  3.96526E-05  293.0  end
rh-103   13  0.0  2.09998E-05  293.0  end
ag-109   13  0.0  2.84526E-06  293.0  end
cs-133   13  0.0  4.31827E-05  293.0  end
nd-143   13  0.0  3.11452E-05  293.0  end
nd-145   13  0.0  2.50844E-05  293.0  end
sm-147   13  0.0  2.26709E-06  293.0  end
sm-149   13  0.0  1.04070E-07  293.0  end
sm-150   13  0.0  9.91201E-06  293.0  end
sm-151   13  0.0  5.24130E-07  293.0  end
sm-152   13  0.0  4.16521E-06  293.0  end
eu-153   13  0.0  3.64271E-06  293.0  end
gd-155   13  0.0  1.14474E-09  293.0  end
u-234    13  0.0  5.05879E-06  293.0  end
u-235    13  0.0  3.37337E-04  293.0  end
u-236    13  0.0  1.02977E-04  293.0  end
u-238    13  0.0  2.15511E-02  293.0  end
np-237   13  0.0  8.67768E-06  293.0  end
pu-238   13  0.0  2.29860E-06  293.0  end
pu-239   13  0.0  1.31808E-04  293.0  end
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tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
u-235    11  0.0  1.24735E-04  293.0  end
u-236    11  0.0  1.26254E-04  293.0  end
u-238    11  0.0  2.11266E-02  293.0  end
np-237   11  0.0  1.66955E-05  293.0  end
pu-238   11  0.0  8.39082E-06  293.0  end
pu-239   11  0.0  1.32485E-04  293.0  end
pu-240   11  0.0  6.24273E-05  293.0  end
pu-241   11  0.0  3.91285E-05  293.0  end
pu-242   11  0.0  2.33174E-05  293.0  end
am-241   11  0.0  1.21804E-06  293.0  end
am-243   11  0.0  5.28382E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  6.05774E-05  293.0  end
tc-99    12  0.0  6.54472E-05  293.0  end
ru-101   12  0.0  6.71636E-05  293.0  end
rh-103   12  0.0  3.18720E-05  293.0  end
ag-109   12  0.0  6.06172E-06  293.0  end
cs-133   12  0.0  6.58576E-05  293.0  end
nd-143   12  0.0  4.07041E-05  293.0  end
nd-145   12  0.0  3.82289E-05  293.0  end
sm-147   12  0.0  3.81610E-06  293.0  end
sm-149   12  0.0  9.10122E-08  293.0  end
sm-150   12  0.0  1.70919E-05  293.0  end
sm-151   12  0.0  6.34925E-07  293.0  end
sm-152   12  0.0  6.34352E-06  293.0  end
eu-153   12  0.0  7.42345E-06  293.0  end
gd-155   12  0.0  2.93373E-09  293.0  end
u-234    12  0.0  3.38349E-06  293.0  end
u-235    12  0.0  1.28685E-04  293.0  end
u-236    12  0.0  1.26040E-04  293.0  end
u-238    12  0.0  2.11393E-02  293.0  end
np-237   12  0.0  1.65004E-05  293.0  end
pu-238   12  0.0  8.19019E-06  293.0  end
pu-239   12  0.0  1.32679E-04  293.0  end
pu-240   12  0.0  6.20454E-05  293.0  end
pu-241   12  0.0  3.89470E-05  293.0  end
pu-242   12  0.0  2.27791E-05  293.0  end
am-241   12  0.0  1.21104E-06  293.0  end
am-243   12  0.0  5.12320E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  5.97211E-05  293.0  end
tc-99    13  0.0  6.46473E-05  293.0  end
ru-101   13  0.0  6.61380E-05  293.0  end
rh-103   13  0.0  3.15615E-05  293.0  end
ag-109   13  0.0  5.93872E-06  293.0  end
cs-133   13  0.0  6.51320E-05  293.0  end
nd-143   13  0.0  4.05272E-05  293.0  end
nd-145   13  0.0  3.77977E-05  293.0  end
sm-147   13  0.0  3.77769E-06  293.0  end
sm-149   13  0.0  9.15705E-08  293.0  end
sm-150   13  0.0  1.68457E-05  293.0  end
sm-151   13  0.0  6.31557E-07  293.0  end
sm-152   13  0.0  6.27260E-06  293.0  end
eu-153   13  0.0  7.28585E-06  293.0  end
gd-155   13  0.0  2.85644E-09  293.0  end
u-234    13  0.0  3.43952E-06  293.0  end
u-235    13  0.0  1.34152E-04  293.0  end
u-236    13  0.0  1.25719E-04  293.0  end
u-238    13  0.0  2.11563E-02  293.0  end
np-237   13  0.0  1.62400E-05  293.0  end
pu-238   13  0.0  7.92157E-06  293.0  end
pu-239   13  0.0  1.32930E-04  293.0  end
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pu-240   13  0.0  4.10458E-05  293.0  end
pu-241   13  0.0  2.57321E-05  293.0  end
pu-242   13  0.0  6.74198E-06  293.0  end
am-241   13  0.0  6.38790E-07  293.0  end
am-243   13  0.0  9.89299E-07  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  3.36503E-05  293.0  end
tc-99    14  0.0  3.98934E-05  293.0  end
ru-101   14  0.0  3.84644E-05  293.0  end
rh-103   14  0.0  2.10564E-05  293.0  end
ag-109   14  0.0  2.95617E-06  293.0  end
cs-133   14  0.0  4.11080E-05  293.0  end
nd-143   14  0.0  3.11044E-05  293.0  end
nd-145   14  0.0  2.39117E-05  293.0  end
sm-147   14  0.0  1.96954E-06  293.0  end
sm-149   14  0.0  1.57521E-07  293.0  end
sm-150   14  0.0  9.74980E-06  293.0  end
sm-151   14  0.0  7.27564E-07  293.0  end
sm-152   14  0.0  3.84958E-06  293.0  end
eu-153   14  0.0  3.66778E-06  293.0  end
gd-155   14  0.0  1.90097E-09  293.0  end
u-234    14  0.0  4.82575E-06  293.0  end
u-235    14  0.0  3.86239E-04  293.0  end
u-236    14  0.0  1.01160E-04  293.0  end
u-238    14  0.0  2.14635E-02  293.0  end
np-237   14  0.0  1.03746E-05  293.0  end
pu-238   14  0.0  2.90787E-06  293.0  end
pu-239   14  0.0  1.85170E-04  293.0  end
pu-240   14  0.0  4.47126E-05  293.0  end
pu-241   14  0.0  3.21654E-05  293.0  end
pu-242   14  0.0  6.52088E-06  293.0  end
am-241   14  0.0  8.08648E-07  293.0  end
am-243   14  0.0  1.12732E-06  293.0  end
o        14  0.0  4.58960E-02  293.0  end
mo-95    15  0.0  3.18747E-05  293.0  end
tc-99    15  0.0  3.81865E-05  293.0  end
ru-101   15  0.0  3.66371E-05  293.0  end
rh-103   15  0.0  2.00919E-05  293.0  end
ag-109   15  0.0  2.75461E-06  293.0  end
cs-133   15  0.0  3.94126E-05  293.0  end
nd-143   15  0.0  2.99492E-05  293.0  end
nd-145   15  0.0  2.29344E-05  293.0  end
sm-147   15  0.0  1.85309E-06  293.0  end
sm-149   15  0.0  1.56507E-07  293.0  end
sm-150   15  0.0  9.24455E-06  293.0  end
sm-151   15  0.0  7.06978E-07  293.0  end
sm-152   15  0.0  3.69315E-06  293.0  end
eu-153   15  0.0  3.42425E-06  293.0  end
gd-155   15  0.0  1.72412E-09  293.0  end
u-234    15  0.0  4.95257E-06  293.0  end
u-235    15  0.0  4.03591E-04  293.0  end
u-236    15  0.0  9.85388E-05  293.0  end
u-238    15  0.0  2.14923E-02  293.0  end
np-237   15  0.0  9.70838E-06  293.0  end
pu-238   15  0.0  2.57506E-06  293.0  end
pu-239   15  0.0  1.82032E-04  293.0  end
pu-240   15  0.0  4.25490E-05  293.0  end
pu-241   15  0.0  3.02743E-05  293.0  end
pu-242   15  0.0  5.81108E-06  293.0  end
am-241   15  0.0  7.32731E-07  293.0  end
am-243   15  0.0  9.59052E-07  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  2.92630E-05  293.0  end
tc-99    16  0.0  3.56726E-05  293.0  end
ru-101   16  0.0  3.39805E-05  293.0  end
rh-103   16  0.0  1.86627E-05  293.0  end
ag-109   16  0.0  2.46676E-06  293.0  end
cs-133   16  0.0  3.69003E-05  293.0  end
nd-143   16  0.0  2.82133E-05  293.0  end
nd-145   16  0.0  2.14914E-05  293.0  end
sm-147   16  0.0  1.68059E-06  293.0  end
sm-149   16  0.0  1.54781E-07  293.0  end
sm-150   16  0.0  8.50893E-06  293.0  end
sm-151   16  0.0  6.76677E-07  293.0  end
sm-152   16  0.0  3.46028E-06  293.0  end
eu-153   16  0.0  3.07522E-06  293.0  end
gd-155   16  0.0  1.48630E-09  293.0  end
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pu-240   13  0.0  6.15186E-05  293.0  end
pu-241   13  0.0  3.86844E-05  293.0  end
pu-242   13  0.0  2.20594E-05  293.0  end
am-241   13  0.0  1.20082E-06  293.0  end
am-243   13  0.0  4.90995E-06  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  5.67702E-05  293.0  end
tc-99    14  0.0  6.18960E-05  293.0  end
ru-101   14  0.0  6.40068E-05  293.0  end
rh-103   14  0.0  3.27735E-05  293.0  end
ag-109   14  0.0  5.93369E-06  293.0  end
cs-133   14  0.0  6.21011E-05  293.0  end
nd-143   14  0.0  4.41957E-05  293.0  end
nd-145   14  0.0  3.63037E-05  293.0  end
sm-147   14  0.0  3.27372E-06  293.0  end
sm-149   14  0.0  1.62711E-07  293.0  end
sm-150   14  0.0  1.65226E-05  293.0  end
sm-151   14  0.0  9.93318E-07  293.0  end
sm-152   14  0.0  5.76859E-06  293.0  end
eu-153   14  0.0  7.13362E-06  293.0  end
gd-155   14  0.0  5.48548E-09  293.0  end
u-234    14  0.0  3.29553E-06  293.0  end
u-235    14  0.0  1.99550E-04  293.0  end
u-236    14  0.0  1.23472E-04  293.0  end
u-238    14  0.0  2.10262E-02  293.0  end
np-237   14  0.0  1.92622E-05  293.0  end
pu-238   14  0.0  9.82799E-06  293.0  end
pu-239   14  0.0  2.10043E-04  293.0  end
pu-240   14  0.0  6.96585E-05  293.0  end
pu-241   14  0.0  5.35700E-05  293.0  end
pu-242   14  0.0  1.96511E-05  293.0  end
am-241   14  0.0  1.85958E-06  293.0  end
am-243   14  0.0  4.96822E-06  293.0  end
o        14  0.0  4.58960E-02  293.0  end
mo-95    15  0.0  5.44836E-05  293.0  end
tc-99    15  0.0  5.97506E-05  293.0  end
ru-101   15  0.0  6.13299E-05  293.0  end
rh-103   15  0.0  3.17026E-05  293.0  end
ag-109   15  0.0  5.61562E-06  293.0  end
cs-133   15  0.0  6.01334E-05  293.0  end
nd-143   15  0.0  4.30734E-05  293.0  end
nd-145   15  0.0  3.51086E-05  293.0  end
sm-147   15  0.0  3.17009E-06  293.0  end
sm-149   15  0.0  1.62569E-07  293.0  end
sm-150   15  0.0  1.58494E-05  293.0  end
sm-151   15  0.0  9.67307E-07  293.0  end
sm-152   15  0.0  5.58826E-06  293.0  end
eu-153   15  0.0  6.77780E-06  293.0  end
gd-155   15  0.0  5.01444E-09  293.0  end
u-234    15  0.0  3.43436E-06  293.0  end
u-235    15  0.0  2.14776E-04  293.0  end
u-236    15  0.0  1.22265E-04  293.0  end
u-238    15  0.0  2.10753E-02  293.0  end
np-237   15  0.0  1.84416E-05  293.0  end
pu-238   15  0.0  8.92522E-06  293.0  end
pu-239   15  0.0  2.08586E-04  293.0  end
pu-240   15  0.0  6.75419E-05  293.0  end
pu-241   15  0.0  5.17740E-05  293.0  end
pu-242   15  0.0  1.80557E-05  293.0  end
am-241   15  0.0  1.76066E-06  293.0  end
am-243   15  0.0  4.44685E-06  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  5.09290E-05  293.0  end
tc-99    16  0.0  5.63971E-05  293.0  end
ru-101   16  0.0  5.72361E-05  293.0  end
rh-103   16  0.0  2.99927E-05  293.0  end
ag-109   16  0.0  5.12974E-06  293.0  end
cs-133   16  0.0  5.70213E-05  293.0  end
nd-143   16  0.0  4.12493E-05  293.0  end
nd-145   16  0.0  3.32364E-05  293.0  end
sm-147   16  0.0  2.99597E-06  293.0  end
sm-149   16  0.0  1.62307E-07  293.0  end
sm-150   16  0.0  1.48009E-05  293.0  end
sm-151   16  0.0  9.26712E-07  293.0  end
sm-152   16  0.0  5.30372E-06  293.0  end
eu-153   16  0.0  6.22674E-06  293.0  end
gd-155   16  0.0  4.33744E-09  293.0  end
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u-234     16  0.0  5.14101E-06  293.0  end
u-235     16  0.0  4.29922E-04  293.0  end
u-236     16  0.0  9.44464E-05  293.0  end
u-238     16  0.0  2.15333E-02  293.0  end
np-237    16  0.0  8.74397E-06  293.0  end
pu-238    16  0.0  2.13179E-06  293.0  end
pu-239    16  0.0  1.76977E-04  293.0  end
pu-240    16  0.0  3.93257E-05  293.0  end
pu-241    16  0.0  2.74606E-05  293.0  end
pu-242    16  0.0  4.84553E-06  293.0  end
am-241    16  0.0  6.25484E-07  293.0  end
am-243    16  0.0  7.42792E-07  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  2.49846E-05  293.0  end
tc-99     17  0.0  3.15498E-05  293.0  end
ru-101    17  0.0  2.97112E-05  293.0  end
rh-103    17  0.0  1.62961E-05  293.0  end
ag-109    17  0.0  2.01934E-06  293.0  end
cs-133    17  0.0  3.27452E-05  293.0  end
nd-143    17  0.0  2.52787E-05  293.0  end
nd-145    17  0.0  1.91118E-05  293.0  end
sm-147    17  0.0  1.39790E-06  293.0  end
sm-149    17  0.0  1.51262E-07  293.0  end
sm-150    17  0.0  7.32690E-06  293.0  end
sm-151    17  0.0  6.27006E-07  293.0  end
sm-152    17  0.0  3.07161E-06  293.0  end
eu-153    17  0.0  2.53023E-06  293.0  end
gd-155    17  0.0  1.15135E-09  293.0  end
u-234     17  0.0  5.45399E-06  293.0  end
u-235     17  0.0  4.75122E-04  293.0  end
u-236     17  0.0  8.71458E-05  293.0  end
u-238     17  0.0  2.15984E-02  293.0  end
np-237    17  0.0  7.21537E-06  293.0  end
pu-238    17  0.0  1.51896E-06  293.0  end
pu-239    17  0.0  1.67460E-04  293.0  end
pu-240    17  0.0  3.39682E-05  293.0  end
pu-241    17  0.0  2.28112E-05  293.0  end
pu-242    17  0.0  3.46675E-06  293.0  end
am-241    17  0.0  4.63818E-07  293.0  end
am-243    17  0.0  4.63625E-07  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  1.73104E-05  293.0  end
tc-99     18  0.0  2.41222E-05  293.0  end
ru-101    18  0.0  2.22734E-05  293.0  end
rh-103    18  0.0  1.19898E-05  293.0  end
ag-109    18  0.0  1.29862E-06  293.0  end
cs-133    18  0.0  2.51558E-05  293.0  end
nd-143    18  0.0  1.97172E-05  293.0  end
nd-145    18  0.0  1.47806E-05  293.0  end
sm-147    18  0.0  9.06763E-07  293.0  end
sm-149    18  0.0  1.42348E-07  293.0  end
sm-150    18  0.0  5.28886E-06  293.0  end
sm-151    18  0.0  5.37314E-07  293.0  end
sm-152    18  0.0  2.34710E-06  293.0  end
eu-153    18  0.0  1.64874E-06  293.0  end
gd-155    18  0.0  7.01769E-10  293.0  end
u-234     18  0.0  6.02958E-06  293.0  end
u-235     18  0.0  5.63255E-04  293.0  end
u-236     18  0.0  7.20874E-05  293.0  end
u-238     18  0.0  2.17085E-02  293.0  end
np-237    18  0.0  4.70199E-06  293.0  end
pu-238    18  0.0  7.31742E-07  293.0  end
pu-239    18  0.0  1.45650E-04  293.0  end
pu-240    18  0.0  2.42397E-05  293.0  end
pu-241    18  0.0  1.46019E-05  293.0  end
pu-242    18  0.0  1.61382E-06  293.0  end
am-241    18  0.0  2.28391E-07  293.0  end
am-243    18  0.0  1.58691E-07  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  3.60489E-06  293.0  end
tc-99     19  0.0  9.62205E-06  293.0  end
ru-101    19  0.0  8.62330E-06  293.0  end
rh-103    19  0.0  3.72052E-06  293.0  end
ag-109    19  0.0  2.80964E-07  293.0  end
cs-133    19  0.0  1.00124E-05  293.0  end
nd-143    19  0.0  7.82217E-06  293.0  end
nd-145    19  0.0  6.11608E-06  293.0  end
```

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u-234     16  0.0  3.65669E-06  293.0  end
u-235     16  0.0  2.39857E-04  293.0  end
u-236     16  0.0  1.19951E-04  293.0  end
u-238     16  0.0  2.11489E-02  293.0  end
np-237    16  0.0  1.70778E-05  293.0  end
pu-238    16  0.0  7.61244E-06  293.0  end
pu-239    16  0.0  2.05961E-04  293.0  end
pu-240    16  0.0  6.40563E-05  293.0  end
pu-241    16  0.0  4.88499E-05  293.0  end
pu-242    16  0.0  1.56865E-05  293.0  end
am-241    16  0.0  1.60170E-06  293.0  end
am-243    16  0.0  3.70170E-06  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  4.53387E-05  293.0  end
tc-99     17  0.0  5.10893E-05  293.0  end
ru-101    17  0.0  5.09628E-05  293.0  end
rh-103    17  0.0  2.72065E-05  293.0  end
ag-109    17  0.0  4.38946E-06  293.0  end
cs-133    17  0.0  5.20060E-05  293.0  end
nd-143    17  0.0  3.81946E-05  293.0  end
nd-145    17  0.0  3.02590E-05  293.0  end
sm-147    17  0.0  2.69260E-06  293.0  end
sm-149    17  0.0  1.61536E-07  293.0  end
sm-150    17  0.0  1.31508E-05  293.0  end
sm-151    17  0.0  8.62618E-07  293.0  end
sm-152    17  0.0  4.84635E-06  293.0  end
eu-153    17  0.0  5.37101E-06  293.0  end
gd-155    17  0.0  3.39934E-09  293.0  end
u-234     17  0.0  4.02008E-06  293.0  end
u-235     17  0.0  2.82758E-04  293.0  end
u-236     17  0.0  1.15231E-04  293.0  end
u-238     17  0.0  2.12574E-02  293.0  end
np-237    17  0.0  1.48982E-05  293.0  end
pu-238    17  0.0  5.78822E-06  293.0  end
pu-239    17  0.0  2.00871E-04  293.0  end
pu-240    17  0.0  5.82008E-05  293.0  end
pu-241    17  0.0  4.38693E-05  293.0  end
pu-242    17  0.0  1.22803E-05  293.0  end
am-241    17  0.0  1.34344E-06  293.0  end
am-243    17  0.0  2.68159E-06  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  3.42666E-05  293.0  end
tc-99     18  0.0  4.04857E-05  293.0  end
ru-101    18  0.0  3.91026E-05  293.0  end
rh-103    18  0.0  2.13892E-05  293.0  end
ag-109    18  0.0  3.02721E-06  293.0  end
cs-133    18  0.0  4.16939E-05  293.0  end
nd-143    18  0.0  3.15008E-05  293.0  end
nd-145    18  0.0  2.42500E-05  293.0  end
sm-147    18  0.0  2.00967E-06  293.0  end
sm-149    18  0.0  1.57841E-07  293.0  end
sm-150    18  0.0  9.92606E-06  293.0  end
sm-151    18  0.0  7.34702E-07  293.0  end
sm-152    18  0.0  3.90359E-06  293.0  end
eu-153    18  0.0  3.75341E-06  293.0  end
gd-155    18  0.0  1.96535E-09  293.0  end
u-234     18  0.0  4.78195E-06  293.0  end
u-235     18  0.0  3.80319E-04  293.0  end
u-236     18  0.0  1.02041E-04  293.0  end
u-238     18  0.0  2.14533E-02  293.0  end
np-237    18  0.0  1.06080E-05  293.0  end
pu-238    18  0.0  3.02951E-06  293.0  end
pu-239    18  0.0  1.86207E-04  293.0  end
pu-240    18  0.0  4.54577E-05  293.0  end
pu-241    18  0.0  3.28165E-05  293.0  end
pu-242    18  0.0  6.77733E-06  293.0  end
am-241    18  0.0  8.35494E-07  293.0  end
am-243    18  0.0  1.18983E-06  293.0  end
o         18  0.0  4.58960E-02  293.0  end
mo-95     19  0.0  1.07992E-05  293.0  end
tc-99     19  0.0  1.76762E-05  293.0  end
ru-101    19  0.0  1.60668E-05  293.0  end
rh-103    19  0.0  8.25125E-06  293.0  end
ag-109    19  0.0  7.75062E-07  293.0  end
cs-133    19  0.0  1.84718E-05  293.0  end
nd-143    19  0.0  1.46035E-05  293.0  end
nd-145    19  0.0  1.09672E-05  293.0  end
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sm-147    19  0.0  1.66025E-07  293.0  end
sm-149    19  0.0  1.12591E-07  293.0  end
sm-150    19  0.0  1.77893E-06  293.0  end
sm-151    19  0.0  3.39708E-07  293.0  end
sm-152    19  0.0  8.48281E-07  293.0  end
eu-153    19  0.0  4.06906E-07  293.0  end
gd-155    19  0.0  2.38783E-10  293.0  end
u-234     19  0.0  7.18904E-06  293.0  end
u-235     19  0.0  7.63846E-04  293.0  end
u-236     19  0.0  3.50434E-05  293.0  end
u-238     19  0.0  2.18987E-02  293.0  end
np-237    19  0.0  1.12639E-06  293.0  end
pu-238    19  0.0  6.67749E-08  293.0  end
pu-239    19  0.0  7.78525E-05  293.0  end
pu-240    19  0.0  6.56349E-06  293.0  end
pu-241    19  0.0  2.16806E-06  293.0  end
pu-242    19  0.0  8.57529E-08  293.0  end
am-241    19  0.0  1.30160E-08  293.0  end
am-243    19  0.0  2.92719E-09  293.0  end
o         19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id06270_b30.mip

```
sm-147    19  0.0  5.27112E-07  293.0  end
sm-149    19  0.0  1.31370E-07  293.0  end
sm-150    19  0.0  3.63945E-06  293.0  end
sm-151    19  0.0  4.57408E-07  293.0  end
sm-152    19  0.0  1.69108E-06  293.0  end
eu-153    19  0.0  1.00906E-06  293.0  end
gd-155    19  0.0  4.44172E-10  293.0  end
u-234     19  0.0  6.53976E-06  293.0  end
u-235     19  0.0  6.47341E-04  293.0  end
u-236     19  0.0  5.69246E-05  293.0  end
u-238     19  0.0  2.17965E-02  293.0  end
np-237    19  0.0  2.86069E-06  293.0  end
pu-238    19  0.0  3.20752E-07  293.0  end
pu-239    19  0.0  1.20509E-04  293.0  end
pu-240    19  0.0  1.59776E-05  293.0  end
pu-241    19  0.0  8.15522E-06  293.0  end
pu-242    19  0.0  6.30115E-07  293.0  end
am-241    19  0.0  9.26971E-08  293.0  end
am-243    19  0.0  4.31533E-08  293.0  end
o         19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííí
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EOF ed24_f01_id06270_b50.mip

File ed24_f01_id07315_b30.mip

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lfd.Nr.:   1 aus sha_alf.mod


mo-95      1  0.0  4.67069E-06  293.0  end
tc-99      1  0.0  1.09863E-05  293.0  end
ru-101     1  0.0  9.76043E-06  293.0  end
rh-103     1  0.0  4.33782E-06  293.0  end
ag-109     1  0.0  2.96840E-07  293.0  end
cs-133     1  0.0  1.14667E-05  293.0  end
nd-143     1  0.0  9.00927E-06  293.0  end
nd-145     1  0.0  6.97408E-06  293.0  end
sm-147     1  0.0  2.19762E-07  293.0  end
sm-149     1  0.0  9.14633E-08  293.0  end
sm-150     1  0.0  2.03663E-06  293.0  end
sm-151     1  0.0  3.17012E-07  293.0  end
sm-152     1  0.0  1.00990E-06  293.0  end
eu-153     1  0.0  4.53614E-07  293.0  end
gd-155     1  0.0  2.04788E-10  293.0  end
u-234      1  0.0  7.22023E-06  293.0  end
u-235      1  0.0  7.38873E-04  293.0  end
u-236      1  0.0  3.73654E-05  293.0  end
u-238      1  0.0  2.19107E-02  293.0  end
np-237     1  0.0  1.05409E-06  293.0  end
pu-238     1  0.0  6.33352E-08  293.0  end
pu-239     1  0.0  6.66489E-05  293.0  end
pu-240     1  0.0  6.76284E-06  293.0  end
pu-241     1  0.0  2.13231E-06  293.0  end
pu-242     1  0.0  1.00259E-07  293.0  end
am-241     1  0.0  1.44253E-08  293.0  end
am-243     1  0.0  3.04791E-09  293.0  end
o          1  0.0  4.58960E-02  293.0  end
mo-95      2  0.0  2.12313E-05  293.0  end
tc-99      2  0.0  2.79087E-05  293.0  end
ru-101     2  0.0  2.55954E-05  293.0  end
rh-103     2  0.0  1.36186E-05  293.0  end
ag-109     2  0.0  1.43798E-06  293.0  end
cs-133     2  0.0  2.91472E-05  293.0  end
nd-143     2  0.0  2.22842E-05  293.0  end
nd-145     2  0.0  1.70912E-05  293.0  end
sm-147     2  0.0  1.21594E-06  293.0  end
sm-149     2  0.0  1.04634E-07  293.0  end
sm-150     2  0.0  6.07782E-06  293.0  end
sm-151     2  0.0  4.44308E-07  293.0  end
sm-152     2  0.0  2.80210E-06  293.0  end
eu-153     2  0.0  1.89643E-06  293.0  end
gd-155     2  0.0  5.57124E-10  293.0  end
u-234      2  0.0  6.03439E-06  293.0  end
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File ed24_f01_id07315_b50.mip

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lfd.Nr.:   2 aus sha_alf.mod


mo-95      1  0.0  1.26482E-05  293.0  end
tc-99      1  0.0  1.95368E-05  293.0  end
ru-101     1  0.0  1.75918E-05  293.0  end
rh-103     1  0.0  9.00247E-06  293.0  end
ag-109     1  0.0  7.84850E-07  293.0  end
cs-133     1  0.0  2.04575E-05  293.0  end
nd-143     1  0.0  1.60256E-05  293.0  end
nd-145     1  0.0  1.21365E-05  293.0  end
sm-147     1  0.0  6.53922E-07  293.0  end
sm-149     1  0.0  1.00426E-07  293.0  end
sm-150     1  0.0  3.97195E-06  293.0  end
sm-151     1  0.0  3.89219E-07  293.0  end
sm-152     1  0.0  1.93048E-06  293.0  end
eu-153     1  0.0  1.07424E-06  293.0  end
gd-155     1  0.0  3.43221E-10  293.0  end
u-234      1  0.0  6.62234E-06  293.0  end
u-235      1  0.0  6.11882E-04  293.0  end
u-236      1  0.0  5.95161E-05  293.0  end
u-238      1  0.0  2.18235E-02  293.0  end
np-237     1  0.0  2.56224E-06  293.0  end
pu-238     1  0.0  2.82537E-07  293.0  end
pu-239     1  0.0  9.73220E-05  293.0  end
pu-240     1  0.0  1.57889E-05  293.0  end
pu-241     1  0.0  7.44622E-06  293.0  end
pu-242     1  0.0  6.91114E-07  293.0  end
am-241     1  0.0  9.13615E-08  293.0  end
am-243     1  0.0  4.11972E-08  293.0  end
o          1  0.0  4.58960E-02  293.0  end
mo-95      2  0.0  3.98296E-05  293.0  end
tc-99      2  0.0  4.57776E-05  293.0  end
ru-101     2  0.0  4.39881E-05  293.0  end
rh-103     2  0.0  2.30492E-05  293.0  end
ag-109     2  0.0  3.32577E-06  293.0  end
cs-133     2  0.0  4.71892E-05  293.0  end
nd-143     2  0.0  3.33345E-05  293.0  end
nd-145     2  0.0  2.73747E-05  293.0  end
sm-147     2  0.0  2.57287E-06  293.0  end
sm-149     2  0.0  1.02568E-07  293.0  end
sm-150     2  0.0  1.10964E-05  293.0  end
sm-151     2  0.0  5.45081E-07  293.0  end
sm-152     2  0.0  4.54846E-06  293.0  end
eu-153     2  0.0  4.22833E-06  293.0  end
gd-155     2  0.0  1.37673E-09  293.0  end
u-234      2  0.0  4.77306E-06  293.0  end
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u-235      2  0.0  4.99519E-04  293.0  end
u-236      2  0.0  7.82335E-05  293.0  end
u-238      2  0.0  2.17298E-02  293.0  end
np-237     2  0.0  4.56568E-06  293.0  end
pu-238     2  0.0  7.41492E-07  293.0  end
pu-239     2  0.0  1.16328E-04  293.0  end
pu-240     2  0.0  2.54122E-05  293.0  end
pu-241     2  0.0  1.42574E-05  293.0  end
pu-242     2  0.0  2.09726E-06  293.0  end
am-241     2  0.0  2.49228E-07  293.0  end
am-243     2  0.0  1.91755E-07  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  2.90427E-05  293.0  end
tc-99      3  0.0  3.54266E-05  293.0  end
ru-101     3  0.0  3.30957E-05  293.0  end
rh-103     3  0.0  1.76880E-05  293.0  end
ag-109     3  0.0  2.15539E-06  293.0  end
cs-133     3  0.0  3.68325E-05  293.0  end
nd-143     3  0.0  2.73465E-05  293.0  end
nd-145     3  0.0  2.14648E-05  293.0  end
sm-147     3  0.0  1.78074E-06  293.0  end
sm-149     3  0.0  1.05311E-07  293.0  end
sm-150     3  0.0  8.11454E-06  293.0  end
sm-151     3  0.0  4.89233E-07  293.0  end
sm-152     3  0.0  3.55372E-06  293.0  end
eu-153     3  0.0  2.79184E-06  293.0  end
gd-155     3  0.0  8.37506E-10  293.0  end
u-234      3  0.0  5.50475E-06  293.0  end
u-235      3  0.0  4.07826E-04  293.0  end
u-236      3  0.0  9.26287E-05  293.0  end
u-238      3  0.0  2.16368E-02  293.0  end
np-237     3  0.0  6.71084E-06  293.0  end
pu-238     3  0.0  1.44346E-06  293.0  end
pu-239     3  0.0  1.26732E-04  293.0  end
pu-240     3  0.0  3.40627E-05  293.0  end
pu-241     3  0.0  2.06501E-05  293.0  end
pu-242     3  0.0  4.23479E-06  293.0  end
am-241     3  0.0  4.48617E-07  293.0  end
am-243     3  0.0  5.14189E-07  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  3.66247E-05  293.0  end
tc-99      4  0.0  4.27056E-05  293.0  end
ru-101     4  0.0  4.06791E-05  293.0  end
rh-103     4  0.0  2.14951E-05  293.0  end
ag-109     4  0.0  2.95753E-06  293.0  end
cs-133     4  0.0  4.41455E-05  293.0  end
nd-143     4  0.0  3.16872E-05  293.0  end
nd-145     4  0.0  2.56340E-05  293.0  end
sm-147     4  0.0  2.34093E-06  293.0  end
sm-149     4  0.0  1.03755E-07  293.0  end
sm-150     4  0.0  1.01928E-05  293.0  end
sm-151     4  0.0  5.29238E-07  293.0  end
sm-152     4  0.0  4.25742E-06  293.0  end
eu-153     4  0.0  3.78002E-06  293.0  end
gd-155     4  0.0  1.19767E-09  293.0  end
u-234      4  0.0  4.99050E-06  293.0  end
u-235      4  0.0  3.27069E-04  293.0  end
u-236      4  0.0  1.04426E-04  293.0  end
u-238      4  0.0  2.15373E-02  293.0  end
np-237     4  0.0  8.98879E-06  293.0  end
pu-238     4  0.0  2.45348E-06  293.0  end
pu-239     4  0.0  1.32347E-04  293.0  end
pu-240     4  0.0  4.20805E-05  293.0  end
pu-241     4  0.0  2.64677E-05  293.0  end
pu-242     4  0.0  7.18613E-06  293.0  end
am-241     4  0.0  6.68443E-07  293.0  end
am-243     4  0.0  1.08205E-06  293.0  end
o          4  0.0  4.58960E-02  293.0  end
mo-95      5  0.0  3.87783E-05  293.0  end
tc-99      5  0.0  4.47706E-05  293.0  end
ru-101     5  0.0  4.28954E-05  293.0  end
rh-103     5  0.0  2.25436E-05  293.0  end
ag-109     5  0.0  3.20316E-06  293.0  end
cs-133     5  0.0  4.61945E-05  293.0  end
nd-143     5  0.0  3.28074E-05  293.0  end
nd-145     5  0.0  2.68052E-05  293.0  end
sm-147     5  0.0  2.49741E-06  293.0  end
```

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u-235      2  0.0  2.95379E-04  293.0  end
u-236      2  0.0  1.08742E-04  293.0  end
u-238      2  0.0  2.14917E-02  293.0  end
np-237     2  0.0  9.99246E-06  293.0  end
pu-238     2  0.0  2.99116E-06  293.0  end
pu-239     2  0.0  1.33676E-04  293.0  end
pu-240     2  0.0  4.52922E-05  293.0  end
pu-241     2  0.0  2.87132E-05  293.0  end
pu-242     2  0.0  8.70806E-06  293.0  end
am-241     2  0.0  7.61991E-07  293.0  end
am-243     2  0.0  1.41614E-06  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  5.06994E-05  293.0  end
tc-99      3  0.0  5.61459E-05  293.0  end
ru-101     3  0.0  5.57179E-05  293.0  end
rh-103     3  0.0  2.79821E-05  293.0  end
ag-109     3  0.0  4.69054E-06  293.0  end
cs-133     3  0.0  5.72281E-05  293.0  end
nd-143     3  0.0  3.79639E-05  293.0  end
nd-145     3  0.0  3.31608E-05  293.0  end
sm-147     3  0.0  3.29644E-06  293.0  end
sm-149     3  0.0  9.68565E-08  293.0  end
sm-150     3  0.0  1.42273E-05  293.0  end
sm-151     3  0.0  5.94146E-07  293.0  end
sm-152     3  0.0  5.50897E-06  293.0  end
eu-153     3  0.0  5.85408E-06  293.0  end
gd-155     3  0.0  2.10197E-09  293.0  end
u-234      3  0.0  4.03888E-06  293.0  end
u-235      3  0.0  1.99381E-04  293.0  end
u-236      3  0.0  1.20224E-04  293.0  end
u-238      3  0.0  2.13218E-02  293.0  end
np-237     3  0.0  1.34780E-05  293.0  end
pu-238     3  0.0  5.34761E-06  293.0  end
pu-239     3  0.0  1.34721E-04  293.0  end
pu-240     3  0.0  5.50798E-05  293.0  end
pu-241     3  0.0  3.50511E-05  293.0  end
pu-242     3  0.0  1.51762E-05  293.0  end
am-241     3  0.0  1.04439E-06  293.0  end
am-243     3  0.0  2.99423E-06  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  5.96712E-05  293.0  end
tc-99      4  0.0  6.46007E-05  293.0  end
ru-101     4  0.0  6.60785E-05  293.0  end
rh-103     4  0.0  3.15433E-05  293.0  end
ag-109     4  0.0  5.93158E-06  293.0  end
cs-133     4  0.0  6.50896E-05  293.0  end
nd-143     4  0.0  4.05165E-05  293.0  end
nd-145     4  0.0  3.77725E-05  293.0  end
sm-147     4  0.0  3.77541E-06  293.0  end
sm-149     4  0.0  9.15997E-08  293.0  end
sm-150     4  0.0  1.68313E-05  293.0  end
sm-151     4  0.0  6.31352E-07  293.0  end
sm-152     4  0.0  6.26848E-06  293.0  end
eu-153     4  0.0  7.27784E-06  293.0  end
gd-155     4  0.0  2.85189E-09  293.0  end
u-234      4  0.0  3.44279E-06  293.0  end
u-235      4  0.0  1.34474E-04  293.0  end
u-236      4  0.0  1.25700E-04  293.0  end
u-238      4  0.0  2.11573E-02  293.0  end
np-237     4  0.0  1.62253E-05  293.0  end
pu-238     4  0.0  7.90604E-06  293.0  end
pu-239     4  0.0  1.32944E-04  293.0  end
pu-240     4  0.0  6.14878E-05  293.0  end
pu-241     4  0.0  3.86683E-05  293.0  end
pu-242     4  0.0  2.20178E-05  293.0  end
am-241     4  0.0  1.20020E-06  293.0  end
am-243     4  0.0  4.89767E-06  293.0  end
o          4  0.0  4.58960E-02  293.0  end
mo-95      5  0.0  6.23557E-05  293.0  end
tc-99      5  0.0  6.71035E-05  293.0  end
ru-101     5  0.0  6.93149E-05  293.0  end
rh-103     5  0.0  3.24996E-05  293.0  end
ag-109     5  0.0  6.31933E-06  293.0  end
cs-133     5  0.0  6.73489E-05  293.0  end
nd-143     5  0.0  4.10339E-05  293.0  end
nd-145     5  0.0  3.91194E-05  293.0  end
sm-147     5  0.0  3.89147E-06  293.0  end
```

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sm-149     5  0.0  1.02987E-07  293.0  end
sm-150     5  0.0  1.07987E-05  293.0  end
sm-151     5  0.0  5.39957E-07  293.0  end
sm-152     5  0.0  4.45337E-06  293.0  end
eu-153     5  0.0  4.07942E-06  293.0  end
gd-155     5  0.0  1.31625E-09  293.0  end
u-234      5  0.0  4.84439E-06  293.0  end
u-235      5  0.0  3.05613E-04  293.0  end
u-236      5  0.0  1.07369E-04  293.0  end
u-238      5  0.0  2.15068E-02  293.0  end
np-237     5  0.0  9.66112E-06  293.0  end
pu-238     5  0.0  2.80716E-06  293.0  end
pu-239     5  0.0  1.33299E-04  293.0  end
pu-240     5  0.0  4.42526E-05  293.0  end
pu-241     5  0.0  2.79931E-05  293.0  end
pu-242     5  0.0  8.19047E-06  293.0  end
am-241     5  0.0  7.31520E-07  293.0  end
am-243     5  0.0  1.29979E-06  293.0  end
o          5  0.0  4.58960E-02  293.0  end
mo-95      6  0.0  3.99245E-05  293.0  end
tc-99      6  0.0  4.58684E-05  293.0  end
ru-101     6  0.0  4.40871E-05  293.0  end
rh-103     6  0.0  2.30946E-05  293.0  end
ag-109     6  0.0  3.33693E-06  293.0  end
cs-133     6  0.0  4.72788E-05  293.0  end
nd-143     6  0.0  3.33814E-05  293.0  end
nd-145     6  0.0  2.74260E-05  293.0  end
sm-147     6  0.0  2.57964E-06  293.0  end
sm-149     6  0.0  1.02528E-07  293.0  end
sm-150     6  0.0  1.11233E-05  293.0  end
sm-151     6  0.0  5.45540E-07  293.0  end
sm-152     6  0.0  4.55702E-06  293.0  end
eu-153     6  0.0  4.24185E-06  293.0  end
gd-155     6  0.0  1.38227E-09  293.0  end
u-234      6  0.0  4.76663E-06  293.0  end
u-235      6  0.0  2.94463E-04  293.0  end
u-236      6  0.0  1.08863E-04  293.0  end
u-238      6  0.0  2.14903E-02  293.0  end
np-237     6  0.0  1.00225E-05  293.0  end
pu-238     6  0.0  3.00813E-06  293.0  end
pu-239     6  0.0  1.33708E-04  293.0  end
pu-240     6  0.0  4.53853E-05  293.0  end
pu-241     6  0.0  2.87773E-05  293.0  end
pu-242     6  0.0  8.75567E-06  293.0  end
am-241     6  0.0  7.64727E-07  293.0  end
am-243     6  0.0  1.42697E-06  293.0  end
o          6  0.0  4.58960E-02  293.0  end
mo-95      7  0.0  4.03020E-05  293.0  end
tc-99      7  0.0  4.62299E-05  293.0  end
ru-101     7  0.0  4.44816E-05  293.0  end
rh-103     7  0.0  2.32748E-05  293.0  end
ag-109     7  0.0  3.38145E-06  293.0  end
cs-133     7  0.0  4.76350E-05  293.0  end
nd-143     7  0.0  3.35671E-05  293.0  end
nd-145     7  0.0  2.76300E-05  293.0  end
sm-147     7  0.0  2.60653E-06  293.0  end
sm-149     7  0.0  1.02369E-07  293.0  end
sm-150     7  0.0  1.12305E-05  293.0  end
sm-151     7  0.0  5.47362E-07  293.0  end
sm-152     7  0.0  4.59108E-06  293.0  end
eu-153     7  0.0  4.29579E-06  293.0  end
gd-155     7  0.0  1.40447E-09  293.0  end
u-234      7  0.0  4.74102E-06  293.0  end
u-235      7  0.0  2.90831E-04  293.0  end
u-236      7  0.0  1.09344E-04  293.0  end
u-238      7  0.0  2.14850E-02  293.0  end
np-237     7  0.0  1.01420E-05  293.0  end
pu-238     7  0.0  3.07627E-06  293.0  end
pu-239     7  0.0  1.33828E-04  293.0  end
pu-240     7  0.0  4.57545E-05  293.0  end
pu-241     7  0.0  2.90311E-05  293.0  end
pu-242     7  0.0  8.94661E-06  293.0  end
am-241     7  0.0  7.75585E-07  293.0  end
am-243     7  0.0  1.47055E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.95792E-05  293.0  end
tc-99      8  0.0  4.55378E-05  293.0  end
```

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sm-149     5  0.0  8.98022E-08  293.0  end
sm-150     5  0.0  1.76014E-05  293.0  end
sm-151     5  0.0  6.41671E-07  293.0  end
sm-152     5  0.0  6.49009E-06  293.0  end
eu-153     5  0.0  7.70931E-06  293.0  end
gd-155     5  0.0  3.09657E-09  293.0  end
u-234      5  0.0  3.26786E-06  293.0  end
u-235      5  0.0  1.17748E-04  293.0  end
u-236      5  0.0  1.26596E-04  293.0  end
u-238      5  0.0  2.11030E-02  293.0  end
np-237     5  0.0  1.70381E-05  293.0  end
pu-238     5  0.0  8.76042E-06  293.0  end
pu-239     5  0.0  1.32133E-04  293.0  end
pu-240     5  0.0  6.30944E-05  293.0  end
pu-241     5  0.0  3.94419E-05  293.0  end
pu-242     5  0.0  2.43086E-05  293.0  end
am-241     5  0.0  1.22961E-06  293.0  end
am-243     5  0.0  5.58383E-06  293.0  end
o          5  0.0  4.58960E-02  293.0  end
mo-95      6  0.0  6.36571E-05  293.0  end
tc-99      6  0.0  6.83111E-05  293.0  end
ru-101     6  0.0  7.09080E-05  293.0  end
rh-103     6  0.0  3.29433E-05  293.0  end
ag-109     6  0.0  6.50953E-06  293.0  end
cs-133     6  0.0  6.84264E-05  293.0  end
nd-143     6  0.0  4.12433E-05  293.0  end
nd-145     6  0.0  3.97662E-05  293.0  end
sm-147     6  0.0  3.94272E-06  293.0  end
sm-149     6  0.0  8.89642E-08  293.0  end
sm-150     6  0.0  1.79721E-05  293.0  end
sm-151     6  0.0  6.46598E-07  293.0  end
sm-152     6  0.0  6.59633E-06  293.0  end
eu-153     6  0.0  7.91861E-06  293.0  end
gd-155     6  0.0  3.22016E-09  293.0  end
u-234      6  0.0  3.18388E-06  293.0  end
u-235      6  0.0  1.10104E-04  293.0  end
u-236      6  0.0  1.26903E-04  293.0  end
u-238      6  0.0  2.10755E-02  293.0  end
np-237     6  0.0  1.74145E-05  293.0  end
pu-238     6  0.0  9.18775E-06  293.0  end
pu-239     6  0.0  1.31720E-04  293.0  end
pu-240     6  0.0  6.38149E-05  293.0  end
pu-241     6  0.0  3.97716E-05  293.0  end
pu-242     6  0.0  2.54552E-05  293.0  end
am-241     6  0.0  1.24098E-06  293.0  end
am-243     6  0.0  5.93717E-06  293.0  end
o          6  0.0  4.58960E-02  293.0  end
mo-95      7  0.0  6.41949E-05  293.0  end
tc-99      7  0.0  6.88092E-05  293.0  end
ru-101     7  0.0  7.15712E-05  293.0  end
rh-103     7  0.0  3.31227E-05  293.0  end
ag-109     7  0.0  6.58854E-06  293.0  end
cs-133     7  0.0  6.88684E-05  293.0  end
nd-143     7  0.0  4.13220E-05  293.0  end
nd-145     7  0.0  4.00320E-05  293.0  end
sm-147     7  0.0  3.96292E-06  293.0  end
sm-149     7  0.0  8.86158E-08  293.0  end
sm-150     7  0.0  1.81246E-05  293.0  end
sm-151     7  0.0  6.48610E-07  293.0  end
sm-152     7  0.0  6.64004E-06  293.0  end
eu-153     7  0.0  8.00504E-06  293.0  end
gd-155     7  0.0  3.27190E-09  293.0  end
u-234      7  0.0  3.14936E-06  293.0  end
u-235      7  0.0  1.07033E-04  293.0  end
u-236      7  0.0  1.27003E-04  293.0  end
u-238      7  0.0  2.10638E-02  293.0  end
np-237     7  0.0  1.75686E-05  293.0  end
pu-238     7  0.0  9.36658E-06  293.0  end
pu-239     7  0.0  1.31543E-04  293.0  end
pu-240     7  0.0  6.41029E-05  293.0  end
pu-241     7  0.0  3.98988E-05  293.0  end
pu-242     7  0.0  2.59358E-05  293.0  end
am-241     7  0.0  1.24514E-06  293.0  end
am-243     7  0.0  6.08700E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.35416E-05  293.0  end
tc-99      8  0.0  6.82041E-05  293.0  end
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ru-101	8	0.0	4.37271E-05	293.0	end
rh-103	8	0.0	2.29293E-05	293.0	end
ag-109	8	0.0	3.29641E-06	293.0	end
cs-133	8	0.0	4.69526E-05	293.0	end
nd-143	8	0.0	3.32102E-05	293.0	end
nd-145	8	0.0	2.72393E-05	293.0	end
sm-147	8	0.0	2.55497E-06	293.0	end
sm-149	8	0.0	1.02671E-07	293.0	end
sm-150	8	0.0	1.10254E-05	293.0	end
sm-151	8	0.0	5.43866E-07	293.0	end
sm-152	8	0.0	4.52584E-06	293.0	end
eu-153	8	0.0	4.19271E-06	293.0	end
gd-155	8	0.0	1.36216E-09	293.0	end
u-234	8	0.0	4.79005E-06	293.0	end
u-235	8	0.0	2.97803E-04	293.0	end
u-236	8	0.0	1.08419E-04	293.0	end
u-238	8	0.0	2.14952E-02	293.0	end
np-237	8	0.0	9.91337E-06	293.0	end
pu-238	8	0.0	2.94667E-06	293.0	end
pu-239	8	0.0	1.33592E-04	293.0	end
pu-240	8	0.0	4.50459E-05	293.0	end
pu-241	8	0.0	2.85432E-05	293.0	end
pu-242	8	0.0	8.58315E-06	293.0	end
am-241	8	0.0	7.54760E-07	293.0	end
am-243	8	0.0	1.38782E-06	293.0	end
o	8	0.0	4.58960E-02	293.0	end
mo-95	9	0.0	3.85161E-05	293.0	end
tc-99	9	0.0	4.45193E-05	293.0	end
ru-101	9	0.0	4.26241E-05	293.0	end
rh-103	9	0.0	2.24167E-05	293.0	end
ag-109	9	0.0	3.17286E-06	293.0	end
cs-133	9	0.0	4.59459E-05	293.0	end
nd-143	9	0.0	3.26739E-05	293.0	end
nd-145	9	0.0	2.66628E-05	293.0	end
sm-147	9	0.0	2.47847E-06	293.0	end
sm-149	9	0.0	1.03087E-07	293.0	end
sm-150	9	0.0	1.07246E-05	293.0	end
sm-151	9	0.0	5.38669E-07	293.0	end
sm-152	9	0.0	4.42961E-06	293.0	end
eu-153	9	0.0	4.04254E-06	293.0	end
gd-155	9	0.0	1.30144E-09	293.0	end
u-234	9	0.0	4.86219E-06	293.0	end
u-235	9	0.0	3.08189E-04	293.0	end
u-236	9	0.0	1.07020E-04	293.0	end
u-238	9	0.0	2.15106E-02	293.0	end
np-237	9	0.0	9.57877E-06	293.0	end
pu-238	9	0.0	2.76242E-06	293.0	end
pu-239	9	0.0	1.33196E-04	293.0	end
pu-240	9	0.0	4.39911E-05	293.0	end
pu-241	9	0.0	2.78109E-05	293.0	end
pu-242	9	0.0	8.06416E-06	293.0	end
am-241	9	0.0	7.23880E-07	293.0	end
am-243	9	0.0	1.27181E-06	293.0	end
o	9	0.0	4.58960E-02	293.0	end
mo-95	10	0.0	3.77225E-05	293.0	end
tc-99	10	0.0	4.37585E-05	293.0	end
ru-101	10	0.0	4.18054E-05	293.0	end
rh-103	10	0.0	2.20313E-05	293.0	end
ag-109	10	0.0	3.08180E-06	293.0	end
cs-133	10	0.0	4.51918E-05	293.0	end
nd-143	10	0.0	3.22648E-05	293.0	end
nd-145	10	0.0	2.62314E-05	293.0	end
sm-147	10	0.0	2.42095E-06	293.0	end
sm-149	10	0.0	1.03377E-07	293.0	end
sm-150	10	0.0	1.05008E-05	293.0	end
sm-151	10	0.0	5.34741E-07	293.0	end
sm-152	10	0.0	4.35752E-06	293.0	end
eu-153	10	0.0	3.93163E-06	293.0	end
gd-155	10	0.0	1.25724E-09	293.0	end
u-234	10	0.0	4.91605E-06	293.0	end
u-235	10	0.0	3.16048E-04	293.0	end
u-236	10	0.0	1.05949E-04	293.0	end
u-238	10	0.0	2.15221E-02	293.0	end
np-237	10	0.0	9.33031E-06	293.0	end
pu-238	10	0.0	2.62984E-06	293.0	end
pu-239	10	0.0	1.32863E-04	293.0	end
pu-240	10	0.0	4.31944E-05	293.0	end

ru-101	8	0.0	7.07660E-05	293.0	end
rh-103	8	0.0	3.29044E-05	293.0	end
ag-109	8	0.0	6.49260E-06	293.0	end
cs-133	8	0.0	6.83313E-05	293.0	end
nd-143	8	0.0	4.12258E-05	293.0	end
nd-145	8	0.0	3.97090E-05	293.0	end
sm-147	8	0.0	3.93831E-06	293.0	end
sm-149	8	0.0	8.90389E-08	293.0	end
sm-150	8	0.0	1.79393E-05	293.0	end
sm-151	8	0.0	6.46165E-07	293.0	end
sm-152	8	0.0	6.58693E-06	293.0	end
eu-153	8	0.0	7.90004E-06	293.0	end
gd-155	8	0.0	3.20910E-09	293.0	end
u-234	8	0.0	3.19131E-06	293.0	end
u-235	8	0.0	1.10770E-04	293.0	end
u-236	8	0.0	1.26880E-04	293.0	end
u-238	8	0.0	2.10779E-02	293.0	end
np-237	8	0.0	1.73813E-05	293.0	end
pu-238	8	0.0	9.14952E-06	293.0	end
pu-239	8	0.0	1.31758E-04	293.0	end
pu-240	8	0.0	6.37523E-05	293.0	end
pu-241	8	0.0	3.97436E-05	293.0	end
pu-242	8	0.0	2.53525E-05	293.0	end
am-241	8	0.0	1.24005E-06	293.0	end
am-243	8	0.0	5.90529E-06	293.0	end
o	8	0.0	4.58960E-02	293.0	end
mo-95	9	0.0	6.25017E-05	293.0	end
tc-99	9	0.0	6.72392E-05	293.0	end
ru-101	9	0.0	6.94929E-05	293.0	end
rh-103	9	0.0	3.25501E-05	293.0	end
ag-109	9	0.0	6.34060E-06	293.0	end
cs-133	9	0.0	6.74704E-05	293.0	end
nd-143	9	0.0	4.10587E-05	293.0	end
nd-145	9	0.0	3.91922E-05	293.0	end
sm-147	9	0.0	3.89739E-06	293.0	end
sm-149	9	0.0	8.97077E-08	293.0	end
sm-150	9	0.0	1.76431E-05	293.0	end
sm-151	9	0.0	6.42227E-07	293.0	end
sm-152	9	0.0	6.50205E-06	293.0	end
eu-153	9	0.0	7.73280E-06	293.0	end
gd-155	9	0.0	3.11030E-09	293.0	end
u-234	9	0.0	3.25841E-06	293.0	end
u-235	9	0.0	1.16875E-04	293.0	end
u-236	9	0.0	1.26635E-04	293.0	end
u-238	9	0.0	2.10999E-02	293.0	end
np-237	9	0.0	1.70808E-05	293.0	end
pu-238	9	0.0	8.80797E-06	293.0	end
pu-239	9	0.0	1.32088E-04	293.0	end
pu-240	9	0.0	6.31770E-05	293.0	end
pu-241	9	0.0	3.94804E-05	293.0	end
pu-242	9	0.0	2.44361E-05	293.0	end
am-241	9	0.0	1.23098E-06	293.0	end
am-243	9	0.0	5.62282E-06	293.0	end
o	9	0.0	4.58960E-02	293.0	end
mo-95	10	0.0	6.17218E-05	293.0	end
tc-99	10	0.0	6.65140E-05	293.0	end
ru-101	10	0.0	6.85447E-05	293.0	end
rh-103	10	0.0	3.22787E-05	293.0	end
ag-109	10	0.0	6.22720E-06	293.0	end
cs-133	10	0.0	6.68198E-05	293.0	end
nd-143	10	0.0	4.09220E-05	293.0	end
nd-145	10	0.0	3.88028E-05	293.0	end
sm-147	10	0.0	3.86531E-06	293.0	end
sm-149	10	0.0	9.02193E-08	293.0	end
sm-150	10	0.0	1.74200E-05	293.0	end
sm-151	10	0.0	6.39260E-07	293.0	end
sm-152	10	0.0	6.43806E-06	293.0	end
eu-153	10	0.0	7.60737E-06	293.0	end
gd-155	10	0.0	3.03756E-09	293.0	end
u-234	10	0.0	3.30897E-06	293.0	end
u-235	10	0.0	1.21581E-04	293.0	end
u-236	10	0.0	1.26415E-04	293.0	end
u-238	10	0.0	2.11161E-02	293.0	end
np-237	10	0.0	1.68507E-05	293.0	end
pu-238	10	0.0	8.55527E-06	293.0	end
pu-239	10	0.0	1.32328E-04	293.0	end
pu-240	10	0.0	6.27298E-05	293.0	end

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pu-241    10  0.0  2.72534E-05  293.0  end
pu-242    10  0.0  7.68866E-06  293.0  end
am-241    10  0.0  7.00676E-07  293.0  end
am-243    10  0.0  1.18964E-06  293.0  end
o         10  0.0  4.58960E-02  293.0  end
mo-95     11  0.0  3.71022E-05  293.0  end
tc-99     11  0.0  4.31635E-05  293.0  end
ru-101    11  0.0  4.11680E-05  293.0  end
rh-103    11  0.0  2.17288E-05  293.0  end
ag-109    11  0.0  3.01133E-06  293.0  end
cs-133    11  0.0  4.46009E-05  293.0  end
nd-143    11  0.0  3.19401E-05  293.0  end
nd-145    11  0.0  2.58940E-05  293.0  end
sm-147    11  0.0  2.37580E-06  293.0  end
sm-149    11  0.0  1.03595E-07  293.0  end
sm-150    11  0.0  1.03265E-05  293.0  end
sm-151    11  0.0  5.31640E-07  293.0  end
sm-152    11  0.0  4.30100E-06  293.0  end
eu-153    11  0.0  3.84571E-06  293.0  end
gd-155    11  0.0  1.22334E-09  293.0  end
u-234     11  0.0  4.95812E-06  293.0  end
u-235     11  0.0  3.22255E-04  293.0  end
u-236     11  0.0  1.05095E-04  293.0  end
u-238     11  0.0  2.15307E-02  293.0  end
np-237    11  0.0  9.13701E-06  293.0  end
pu-238    11  0.0  2.52920E-06  293.0  end
pu-239    11  0.0  1.32580E-04  293.0  end
pu-240    11  0.0  4.25667E-05  293.0  end
pu-241    11  0.0  2.68115E-05  293.0  end
pu-242    11  0.0  7.40231E-06  293.0  end
am-241    11  0.0  6.82477E-07  293.0  end
am-243    11  0.0  1.12799E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  3.63734E-05  293.0  end
tc-99     12  0.0  4.24647E-05  293.0  end
ru-101    12  0.0  4.04227E-05  293.0  end
rh-103    12  0.0  2.13720E-05  293.0  end
ag-109    12  0.0  2.92939E-06  293.0  end
cs-133    12  0.0  4.39058E-05  293.0  end
nd-143    12  0.0  3.15532E-05  293.0  end
nd-145    12  0.0  2.54971E-05  293.0  end
sm-147    12  0.0  2.32256E-06  293.0  end
sm-149    12  0.0  1.03836E-07  293.0  end
sm-150    12  0.0  1.01227E-05  293.0  end
sm-151    12  0.0  5.27971E-07  293.0  end
sm-152    12  0.0  4.23447E-06  293.0  end
eu-153    12  0.0  3.74564E-06  293.0  end
gd-155    12  0.0  1.18433E-09  293.0  end
u-234     12  0.0  5.00751E-06  293.0  end
u-235     12  0.0  3.29615E-04  293.0  end
u-236     12  0.0  1.04069E-04  293.0  end
u-238     12  0.0  2.15407E-02  293.0  end
np-237    12  0.0  8.91104E-06  293.0  end
pu-238    12  0.0  2.41426E-06  293.0  end
pu-239    12  0.0  1.32218E-04  293.0  end
pu-240    12  0.0  4.18236E-05  293.0  end
pu-241    12  0.0  2.62856E-05  293.0  end
pu-242    12  0.0  7.07391E-06  293.0  end
am-241    12  0.0  6.61056E-07  293.0  end
am-243    12  0.0  1.05840E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  3.47703E-05  293.0  end
tc-99     13  0.0  4.09698E-05  293.0  end
ru-101    13  0.0  3.96259E-05  293.0  end
rh-103    13  0.0  2.16607E-05  293.0  end
ag-109    13  0.0  3.08569E-06  293.0  end
cs-133    13  0.0  4.21720E-05  293.0  end
nd-143    13  0.0  3.18230E-05  293.0  end
nd-145    13  0.0  2.45262E-05  293.0  end
sm-147    13  0.0  2.04237E-06  293.0  end
sm-149    13  0.0  1.58092E-07  293.0  end
sm-150    13  0.0  1.00704E-05  293.0  end
sm-151    13  0.0  7.40535E-07  293.0  end
sm-152    13  0.0  3.94760E-06  293.0  end
eu-153    13  0.0  3.82381E-06  293.0  end
gd-155    13  0.0  2.01912E-09  293.0  end
u-234     13  0.0  4.74625E-06  293.0  end
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pu-241    10  0.0  3.92710E-05  293.0  end
pu-242    10  0.0  2.37585E-05  293.0  end
am-241    10  0.0  1.22340E-06  293.0  end
am-243    10  0.0  5.41663E-06  293.0  end
o         10  0.0  4.58960E-02  293.0  end
mo-95     11  0.0  6.12090E-05  293.0  end
tc-99     11  0.0  6.60364E-05  293.0  end
ru-101    11  0.0  6.79243E-05  293.0  end
rh-103    11  0.0  3.20976E-05  293.0  end
ag-109    11  0.0  6.15292E-06  293.0  end
cs-133    11  0.0  6.63898E-05  293.0  end
nd-143    11  0.0  4.08269E-05  293.0  end
nd-145    11  0.0  3.85459E-05  293.0  end
sm-147    11  0.0  3.84357E-06  293.0  end
sm-149    11  0.0  9.05696E-08  293.0  end
sm-150    11  0.0  1.72731E-05  293.0  end
sm-151    11  0.0  6.37318E-07  293.0  end
sm-152    11  0.0  6.39579E-06  293.0  end
eu-153    11  0.0  7.52494E-06  293.0  end
gd-155    11  0.0  2.99063E-09  293.0  end
u-234     11  0.0  3.34231E-06  293.0  end
u-235     11  0.0  1.24735E-04  293.0  end
u-236     11  0.0  1.26254E-04  293.0  end
u-238     11  0.0  2.11266E-02  293.0  end
np-237    11  0.0  1.66955E-05  293.0  end
pu-238    11  0.0  8.39082E-06  293.0  end
pu-239    11  0.0  1.32485E-04  293.0  end
pu-240    11  0.0  6.24273E-05  293.0  end
pu-241    11  0.0  3.91285E-05  293.0  end
pu-242    11  0.0  2.33174E-05  293.0  end
am-241    11  0.0  1.21804E-06  293.0  end
am-243    11  0.0  5.28382E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  6.05774E-05  293.0  end
tc-99     12  0.0  6.54472E-05  293.0  end
ru-101    12  0.0  6.71636E-05  293.0  end
rh-103    12  0.0  3.18720E-05  293.0  end
ag-109    12  0.0  6.06172E-06  293.0  end
cs-133    12  0.0  6.58576E-05  293.0  end
nd-143    12  0.0  4.07041E-05  293.0  end
nd-145    12  0.0  3.82289E-05  293.0  end
sm-147    12  0.0  3.81610E-06  293.0  end
sm-149    12  0.0  9.10122E-08  293.0  end
sm-150    12  0.0  1.70919E-05  293.0  end
sm-151    12  0.0  6.34925E-07  293.0  end
sm-152    12  0.0  6.34352E-06  293.0  end
eu-153    12  0.0  7.42345E-06  293.0  end
gd-155    12  0.0  2.93373E-09  293.0  end
u-234     12  0.0  3.38349E-06  293.0  end
u-235     12  0.0  1.28685E-04  293.0  end
u-236     12  0.0  1.26040E-04  293.0  end
u-238     12  0.0  2.11393E-02  293.0  end
np-237    12  0.0  1.65004E-05  293.0  end
pu-238    12  0.0  8.19019E-06  293.0  end
pu-239    12  0.0  1.32679E-04  293.0  end
pu-240    12  0.0  6.20454E-05  293.0  end
pu-241    12  0.0  3.89470E-05  293.0  end
pu-242    12  0.0  2.27791E-05  293.0  end
am-241    12  0.0  1.21104E-06  293.0  end
am-243    12  0.0  5.12320E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  5.81452E-05  293.0  end
tc-99     13  0.0  6.31818E-05  293.0  end
ru-101    13  0.0  6.56329E-05  293.0  end
rh-103    13  0.0  3.34060E-05  293.0  end
ag-109    13  0.0  6.12685E-06  293.0  end
cs-133    13  0.0  6.32701E-05  293.0  end
nd-143    13  0.0  4.48518E-05  293.0  end
nd-145    13  0.0  3.70186E-05  293.0  end
sm-147    13  0.0  3.33277E-06  293.0  end
sm-149    13  0.0  1.62790E-07  293.0  end
sm-150    13  0.0  1.69264E-05  293.0  end
sm-151    13  0.0  1.00893E-06  293.0  end
sm-152    13  0.0  5.87595E-06  293.0  end
eu-153    13  0.0  7.34783E-06  293.0  end
gd-155    13  0.0  5.78279E-09  293.0  end
u-234     13  0.0  3.21365E-06  293.0  end
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u-235     13  0.0  3.75519E-04  293.0  end
u-236     13  0.0  1.02750E-04  293.0  end
u-238     13  0.0  2.14449E-02  293.0  end
np-237    13  0.0  1.07994E-05  293.0  end
pu-238    13  0.0  3.13132E-06  293.0  end
pu-239    13  0.0  1.87034E-04  293.0  end
pu-240    13  0.0  4.60643E-05  293.0  end
pu-241    13  0.0  3.33465E-05  293.0  end
pu-242    13  0.0  6.99086E-06  293.0  end
am-241    13  0.0  8.57613E-07  293.0  end
am-243    13  0.0  1.24251E-06  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  3.36503E-05  293.0  end
tc-99     14  0.0  3.98934E-05  293.0  end
ru-101    14  0.0  3.84644E-05  293.0  end
rh-103    14  0.0  2.10564E-05  293.0  end
ag-109    14  0.0  2.95617E-06  293.0  end
cs-133    14  0.0  4.11080E-05  293.0  end
nd-143    14  0.0  3.11044E-05  293.0  end
nd-145    14  0.0  2.39117E-05  293.0  end
sm-147    14  0.0  1.96954E-06  293.0  end
sm-149    14  0.0  1.57521E-07  293.0  end
sm-150    14  0.0  9.74980E-06  293.0  end
sm-151    14  0.0  7.27564E-07  293.0  end
sm-152    14  0.0  3.84958E-06  293.0  end
eu-153    14  0.0  3.66778E-06  293.0  end
gd-155    14  0.0  1.90097E-09  293.0  end
u-234     14  0.0  4.82575E-06  293.0  end
u-235     14  0.0  3.86239E-04  293.0  end
u-236     14  0.0  1.01160E-04  293.0  end
u-238     14  0.0  2.14635E-02  293.0  end
np-237    14  0.0  1.03746E-05  293.0  end
pu-238    14  0.0  2.90787E-06  293.0  end
pu-239    14  0.0  1.85170E-04  293.0  end
pu-240    14  0.0  4.47126E-05  293.0  end
pu-241    14  0.0  3.21654E-05  293.0  end
pu-242    14  0.0  6.52088E-06  293.0  end
am-241    14  0.0  8.08648E-07  293.0  end
am-243    14  0.0  1.12732E-06  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  3.18747E-05  293.0  end
tc-99     15  0.0  3.81865E-05  293.0  end
ru-101    15  0.0  3.66371E-05  293.0  end
rh-103    15  0.0  2.00919E-05  293.0  end
ag-109    15  0.0  2.75461E-06  293.0  end
cs-133    15  0.0  3.94126E-05  293.0  end
nd-143    15  0.0  2.99492E-05  293.0  end
nd-145    15  0.0  2.29344E-05  293.0  end
sm-147    15  0.0  1.85309E-06  293.0  end
sm-149    15  0.0  1.56507E-07  293.0  end
sm-150    15  0.0  9.24455E-06  293.0  end
sm-151    15  0.0  7.06978E-07  293.0  end
sm-152    15  0.0  3.69315E-06  293.0  end
eu-153    15  0.0  3.42425E-06  293.0  end
gd-155    15  0.0  1.72412E-09  293.0  end
u-234     15  0.0  4.95257E-06  293.0  end
u-235     15  0.0  4.03591E-04  293.0  end
u-236     15  0.0  9.85388E-05  293.0  end
u-238     15  0.0  2.14923E-02  293.0  end
np-237    15  0.0  9.70838E-06  293.0  end
pu-238    15  0.0  2.57506E-06  293.0  end
pu-239    15  0.0  1.82032E-04  293.0  end
pu-240    15  0.0  4.25490E-05  293.0  end
pu-241    15  0.0  3.02743E-05  293.0  end
pu-242    15  0.0  5.81108E-06  293.0  end
am-241    15  0.0  7.32731E-07  293.0  end
am-243    15  0.0  9.59052E-07  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  2.92630E-05  293.0  end
tc-99     16  0.0  3.56726E-05  293.0  end
ru-101    16  0.0  3.39805E-05  293.0  end
rh-103    16  0.0  1.86627E-05  293.0  end
ag-109    16  0.0  2.46676E-06  293.0  end
cs-133    16  0.0  3.69003E-05  293.0  end
nd-143    16  0.0  2.82133E-05  293.0  end
nd-145    16  0.0  2.14914E-05  293.0  end
sm-147    16  0.0  1.68059E-06  293.0  end
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u-235     13  0.0  1.90732E-04  293.0  end
u-236     13  0.0  1.24088E-04  293.0  end
u-238     13  0.0  2.09964E-02  293.0  end
np-237    13  0.0  1.97225E-05  293.0  end
pu-238    13  0.0  1.03892E-05  293.0  end
pu-239    13  0.0  2.10837E-04  293.0  end
pu-240    13  0.0  7.08776E-05  293.0  end
pu-241    13  0.0  5.46243E-05  293.0  end
pu-242    13  0.0  2.06339E-05  293.0  end
am-241    13  0.0  1.91760E-06  293.0  end
am-243    13  0.0  5.29812E-06  293.0  end
o         13  0.0  4.58960E-02  293.0  end
mo-95     14  0.0  5.67702E-05  293.0  end
tc-99     14  0.0  6.18960E-05  293.0  end
ru-101    14  0.0  6.40068E-05  293.0  end
rh-103    14  0.0  3.27735E-05  293.0  end
ag-109    14  0.0  5.93369E-06  293.0  end
cs-133    14  0.0  6.21011E-05  293.0  end
nd-143    14  0.0  4.41957E-05  293.0  end
nd-145    14  0.0  3.63037E-05  293.0  end
sm-147    14  0.0  3.27372E-06  293.0  end
sm-149    14  0.0  1.62711E-07  293.0  end
sm-150    14  0.0  1.65226E-05  293.0  end
sm-151    14  0.0  9.93318E-07  293.0  end
sm-152    14  0.0  5.76859E-06  293.0  end
eu-153    14  0.0  7.13362E-06  293.0  end
gd-155    14  0.0  5.48548E-09  293.0  end
u-234     14  0.0  3.29553E-06  293.0  end
u-235     14  0.0  1.99550E-04  293.0  end
u-236     14  0.0  1.23472E-04  293.0  end
u-238     14  0.0  2.10262E-02  293.0  end
np-237    14  0.0  1.92622E-05  293.0  end
pu-238    14  0.0  9.82799E-06  293.0  end
pu-239    14  0.0  2.10043E-04  293.0  end
pu-240    14  0.0  6.96585E-05  293.0  end
pu-241    14  0.0  5.35700E-05  293.0  end
pu-242    14  0.0  1.96511E-05  293.0  end
am-241    14  0.0  1.85958E-06  293.0  end
am-243    14  0.0  4.96822E-06  293.0  end
o         14  0.0  4.58960E-02  293.0  end
mo-95     15  0.0  5.44836E-05  293.0  end
tc-99     15  0.0  5.97506E-05  293.0  end
ru-101    15  0.0  6.13299E-05  293.0  end
rh-103    15  0.0  3.17026E-05  293.0  end
ag-109    15  0.0  5.61562E-06  293.0  end
cs-133    15  0.0  6.01334E-05  293.0  end
nd-143    15  0.0  4.30734E-05  293.0  end
nd-145    15  0.0  3.51086E-05  293.0  end
sm-147    15  0.0  3.17009E-06  293.0  end
sm-149    15  0.0  1.62569E-07  293.0  end
sm-150    15  0.0  1.58494E-05  293.0  end
sm-151    15  0.0  9.67307E-07  293.0  end
sm-152    15  0.0  5.58826E-06  293.0  end
eu-153    15  0.0  6.77780E-06  293.0  end
gd-155    15  0.0  5.01444E-09  293.0  end
u-234     15  0.0  3.43436E-06  293.0  end
u-235     15  0.0  2.14776E-04  293.0  end
u-236     15  0.0  1.22265E-04  293.0  end
u-238     15  0.0  2.10753E-02  293.0  end
np-237    15  0.0  1.84416E-05  293.0  end
pu-238    15  0.0  8.92522E-06  293.0  end
pu-239    15  0.0  2.08586E-04  293.0  end
pu-240    15  0.0  6.75419E-05  293.0  end
pu-241    15  0.0  5.17740E-05  293.0  end
pu-242    15  0.0  1.80557E-05  293.0  end
am-241    15  0.0  1.76066E-06  293.0  end
am-243    15  0.0  4.44685E-06  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  5.09290E-05  293.0  end
tc-99     16  0.0  5.63971E-05  293.0  end
ru-101    16  0.0  5.72361E-05  293.0  end
rh-103    16  0.0  2.99927E-05  293.0  end
ag-109    16  0.0  5.12974E-06  293.0  end
cs-133    16  0.0  5.70213E-05  293.0  end
nd-143    16  0.0  4.12493E-05  293.0  end
nd-145    16  0.0  3.32364E-05  293.0  end
sm-147    16  0.0  2.99597E-06  293.0  end
```

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sm-149   16  0.0  1.54781E-07  293.0  end
sm-150   16  0.0  8.50893E-06  293.0  end
sm-151   16  0.0  6.76677E-07  293.0  end
sm-152   16  0.0  3.46028E-06  293.0  end
eu-153   16  0.0  3.07522E-06  293.0  end
gd-155   16  0.0  1.48630E-09  293.0  end
u-234    16  0.0  5.14101E-06  293.0  end
u-235    16  0.0  4.29922E-04  293.0  end
u-236    16  0.0  9.44464E-05  293.0  end
u-238    16  0.0  2.15333E-02  293.0  end
np-237   16  0.0  8.74397E-06  293.0  end
pu-238   16  0.0  2.13179E-06  293.0  end
pu-239   16  0.0  1.76977E-04  293.0  end
pu-240   16  0.0  3.93257E-05  293.0  end
pu-241   16  0.0  2.74606E-05  293.0  end
pu-242   16  0.0  4.84553E-06  293.0  end
am-241   16  0.0  6.25484E-07  293.0  end
am-243   16  0.0  7.42792E-07  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  2.49846E-05  293.0  end
tc-99    17  0.0  3.15498E-05  293.0  end
ru-101   17  0.0  2.97112E-05  293.0  end
rh-103   17  0.0  1.62961E-05  293.0  end
ag-109   17  0.0  2.01934E-06  293.0  end
cs-133   17  0.0  3.27452E-05  293.0  end
nd-143   17  0.0  2.52787E-05  293.0  end
nd-145   17  0.0  1.91118E-05  293.0  end
sm-147   17  0.0  1.39790E-06  293.0  end
sm-149   17  0.0  1.51262E-07  293.0  end
sm-150   17  0.0  7.32690E-06  293.0  end
sm-151   17  0.0  6.27006E-07  293.0  end
sm-152   17  0.0  3.07161E-06  293.0  end
eu-153   17  0.0  2.53023E-06  293.0  end
gd-155   17  0.0  1.15135E-09  293.0  end
u-234    17  0.0  5.45399E-06  293.0  end
u-235    17  0.0  4.75122E-04  293.0  end
u-236    17  0.0  8.71458E-05  293.0  end
u-238    17  0.0  2.15984E-02  293.0  end
np-237   17  0.0  7.21537E-06  293.0  end
pu-238   17  0.0  1.51896E-06  293.0  end
pu-239   17  0.0  1.67460E-04  293.0  end
pu-240   17  0.0  3.39682E-05  293.0  end
pu-241   17  0.0  2.28112E-05  293.0  end
pu-242   17  0.0  3.46675E-06  293.0  end
am-241   17  0.0  4.63818E-07  293.0  end
am-243   17  0.0  4.63625E-07  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  1.73104E-05  293.0  end
tc-99    18  0.0  2.41222E-05  293.0  end
ru-101   18  0.0  2.22734E-05  293.0  end
rh-103   18  0.0  1.19898E-05  293.0  end
ag-109   18  0.0  1.29862E-06  293.0  end
cs-133   18  0.0  2.51558E-05  293.0  end
nd-143   18  0.0  1.97172E-05  293.0  end
nd-145   18  0.0  1.47806E-05  293.0  end
sm-147   18  0.0  9.06763E-07  293.0  end
sm-149   18  0.0  1.42348E-07  293.0  end
sm-150   18  0.0  5.28886E-06  293.0  end
sm-151   18  0.0  5.37314E-07  293.0  end
sm-152   18  0.0  2.34710E-06  293.0  end
eu-153   18  0.0  1.64874E-06  293.0  end
gd-155   18  0.0  7.01769E-10  293.0  end
u-234    18  0.0  6.02958E-06  293.0  end
u-235    18  0.0  5.63255E-04  293.0  end
u-236    18  0.0  7.20874E-05  293.0  end
u-238    18  0.0  2.17085E-02  293.0  end
np-237   18  0.0  4.70199E-06  293.0  end
pu-238   18  0.0  7.31742E-07  293.0  end
pu-239   18  0.0  1.45650E-04  293.0  end
pu-240   18  0.0  2.42397E-05  293.0  end
pu-241   18  0.0  1.46019E-05  293.0  end
pu-242   18  0.0  1.61382E-06  293.0  end
am-241   18  0.0  2.28391E-07  293.0  end
am-243   18  0.0  1.58691E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  3.60489E-06  293.0  end
tc-99    19  0.0  9.62205E-06  293.0  end
```

```
sm-149   16  0.0  1.62307E-07  293.0  end
sm-150   16  0.0  1.48009E-05  293.0  end
sm-151   16  0.0  9.26712E-07  293.0  end
sm-152   16  0.0  5.30372E-06  293.0  end
eu-153   16  0.0  6.22674E-06  293.0  end
gd-155   16  0.0  4.33744E-09  293.0  end
u-234    16  0.0  3.65669E-06  293.0  end
u-235    16  0.0  2.39857E-04  293.0  end
u-236    16  0.0  1.19951E-04  293.0  end
u-238    16  0.0  2.11489E-02  293.0  end
np-237   16  0.0  1.70778E-05  293.0  end
pu-238   16  0.0  7.61244E-06  293.0  end
pu-239   16  0.0  2.05961E-04  293.0  end
pu-240   16  0.0  6.40563E-05  293.0  end
pu-241   16  0.0  4.88499E-05  293.0  end
pu-242   16  0.0  1.56865E-05  293.0  end
am-241   16  0.0  1.60170E-06  293.0  end
am-243   16  0.0  3.70170E-06  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  4.53387E-05  293.0  end
tc-99    17  0.0  5.10893E-05  293.0  end
ru-101   17  0.0  5.09628E-05  293.0  end
rh-103   17  0.0  2.72065E-05  293.0  end
ag-109   17  0.0  4.38946E-06  293.0  end
cs-133   17  0.0  5.20060E-05  293.0  end
nd-143   17  0.0  3.81946E-05  293.0  end
nd-145   17  0.0  3.02590E-05  293.0  end
sm-147   17  0.0  2.69260E-06  293.0  end
sm-149   17  0.0  1.61536E-07  293.0  end
sm-150   17  0.0  1.31508E-05  293.0  end
sm-151   17  0.0  8.62618E-07  293.0  end
sm-152   17  0.0  4.84635E-06  293.0  end
eu-153   17  0.0  5.37101E-06  293.0  end
gd-155   17  0.0  3.39934E-09  293.0  end
u-234    17  0.0  4.02008E-06  293.0  end
u-235    17  0.0  2.82758E-04  293.0  end
u-236    17  0.0  1.15231E-04  293.0  end
u-238    17  0.0  2.12574E-02  293.0  end
np-237   17  0.0  1.48982E-05  293.0  end
pu-238   17  0.0  5.78822E-06  293.0  end
pu-239   17  0.0  2.00871E-04  293.0  end
pu-240   17  0.0  5.82008E-05  293.0  end
pu-241   17  0.0  4.38693E-05  293.0  end
pu-242   17  0.0  1.22803E-05  293.0  end
am-241   17  0.0  1.34344E-06  293.0  end
am-243   17  0.0  2.68159E-06  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  3.42666E-05  293.0  end
tc-99    18  0.0  4.04857E-05  293.0  end
ru-101   18  0.0  3.91026E-05  293.0  end
rh-103   18  0.0  2.13892E-05  293.0  end
ag-109   18  0.0  3.02721E-06  293.0  end
cs-133   18  0.0  4.16939E-05  293.0  end
nd-143   18  0.0  3.15008E-05  293.0  end
nd-145   18  0.0  2.42500E-05  293.0  end
sm-147   18  0.0  2.00967E-06  293.0  end
sm-149   18  0.0  1.57841E-07  293.0  end
sm-150   18  0.0  9.92606E-06  293.0  end
sm-151   18  0.0  7.34702E-07  293.0  end
sm-152   18  0.0  3.90359E-06  293.0  end
eu-153   18  0.0  3.75341E-06  293.0  end
gd-155   18  0.0  1.96535E-09  293.0  end
u-234    18  0.0  4.78195E-06  293.0  end
u-235    18  0.0  3.80319E-04  293.0  end
u-236    18  0.0  1.02041E-04  293.0  end
u-238    18  0.0  2.14533E-02  293.0  end
np-237   18  0.0  1.06080E-05  293.0  end
pu-238   18  0.0  3.02951E-06  293.0  end
pu-239   18  0.0  1.86207E-04  293.0  end
pu-240   18  0.0  4.54577E-05  293.0  end
pu-241   18  0.0  3.28165E-05  293.0  end
pu-242   18  0.0  6.77733E-06  293.0  end
am-241   18  0.0  8.35494E-07  293.0  end
am-243   18  0.0  1.18983E-06  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  1.07992E-05  293.0  end
tc-99    19  0.0  1.76762E-05  293.0  end
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ru-101   19  0.0  8.62330E-06  293.0  end
rh-103   19  0.0  3.72052E-06  293.0  end
ag-109   19  0.0  2.80964E-07  293.0  end
cs-133   19  0.0  1.00124E-05  293.0  end
nd-143   19  0.0  7.82217E-06  293.0  end
nd-145   19  0.0  6.11608E-06  293.0  end
sm-147   19  0.0  1.66025E-07  293.0  end
sm-149   19  0.0  1.12591E-07  293.0  end
sm-150   19  0.0  1.77893E-06  293.0  end
sm-151   19  0.0  3.39708E-07  293.0  end
sm-152   19  0.0  8.48281E-07  293.0  end
eu-153   19  0.0  4.06906E-07  293.0  end
gd-155   19  0.0  2.38783E-10  293.0  end
u-234    19  0.0  7.18904E-06  293.0  end
u-235    19  0.0  7.63846E-04  293.0  end
u-236    19  0.0  3.50434E-05  293.0  end
u-238    19  0.0  2.18987E-02  293.0  end
np-237   19  0.0  1.12639E-06  293.0  end
pu-238   19  0.0  6.67749E-08  293.0  end
pu-239   19  0.0  7.78525E-05  293.0  end
pu-240   19  0.0  6.56349E-06  293.0  end
pu-241   19  0.0  2.16806E-06  293.0  end
pu-242   19  0.0  8.57529E-08  293.0  end
am-241   19  0.0  1.30160E-08  293.0  end
am-243   19  0.0  2.92719E-09  293.0  end
o        19  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id07315_b30.mip

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ru-101   19  0.0  1.60668E-05  293.0  end
rh-103   19  0.0  8.25125E-06  293.0  end
ag-109   19  0.0  7.75062E-07  293.0  end
cs-133   19  0.0  1.84718E-05  293.0  end
nd-143   19  0.0  1.46035E-05  293.0  end
nd-145   19  0.0  1.09672E-05  293.0  end
sm-147   19  0.0  5.27112E-07  293.0  end
sm-149   19  0.0  1.31370E-07  293.0  end
sm-150   19  0.0  3.63945E-06  293.0  end
sm-151   19  0.0  4.57408E-07  293.0  end
sm-152   19  0.0  1.69108E-06  293.0  end
eu-153   19  0.0  1.00906E-06  293.0  end
gd-155   19  0.0  4.44172E-10  293.0  end
u-234    19  0.0  6.53976E-06  293.0  end
u-235    19  0.0  6.47341E-04  293.0  end
u-236    19  0.0  5.69246E-05  293.0  end
u-238    19  0.0  2.17965E-02  293.0  end
np-237   19  0.0  2.86069E-06  293.0  end
pu-238   19  0.0  3.20752E-07  293.0  end
pu-239   19  0.0  1.20509E-04  293.0  end
pu-240   19  0.0  1.59776E-05  293.0  end
pu-241   19  0.0  8.15522E-06  293.0  end
pu-242   19  0.0  6.30115E-07  293.0  end
am-241   19  0.0  9.26971E-08  293.0  end
am-243   19  0.0  4.31533E-08  293.0  end
o        19  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id07315_b50.mip

File ed24_f01_id09405_b30.mip

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lfd.Nr.:   1 aus sha_alf.mod


mo-95     1  0.0  4.67069E-06  293.0  end
tc-99     1  0.0  1.09863E-05  293.0  end
ru-101    1  0.0  9.76043E-06  293.0  end
rh-103    1  0.0  4.33782E-06  293.0  end
ag-109    1  0.0  2.96840E-07  293.0  end
cs-133    1  0.0  1.14667E-05  293.0  end
nd-143    1  0.0  9.00927E-06  293.0  end
nd-145    1  0.0  6.97408E-06  293.0  end
sm-147    1  0.0  2.19762E-07  293.0  end
sm-149    1  0.0  9.14633E-08  293.0  end
sm-150    1  0.0  2.03663E-06  293.0  end
sm-151    1  0.0  3.17012E-07  293.0  end
sm-152    1  0.0  1.00990E-06  293.0  end
eu-153    1  0.0  4.53614E-07  293.0  end
gd-155    1  0.0  2.04788E-10  293.0  end
u-234     1  0.0  7.22023E-06  293.0  end
u-235     1  0.0  7.38873E-04  293.0  end
u-236     1  0.0  3.73654E-05  293.0  end
u-238     1  0.0  2.19107E-02  293.0  end
np-237    1  0.0  1.05409E-06  293.0  end
pu-238    1  0.0  6.33352E-08  293.0  end
pu-239    1  0.0  6.66489E-05  293.0  end
pu-240    1  0.0  6.76284E-06  293.0  end
pu-241    1  0.0  2.13231E-06  293.0  end
pu-242    1  0.0  1.00259E-07  293.0  end
am-241    1  0.0  1.44253E-08  293.0  end
am-243    1  0.0  3.04791E-09  293.0  end
o         1  0.0  4.58960E-02  293.0  end
mo-95     2  0.0  2.12313E-05  293.0  end
tc-99     2  0.0  2.79087E-05  293.0  end
ru-101    2  0.0  2.55954E-05  293.0  end
rh-103    2  0.0  1.36186E-05  293.0  end
ag-109    2  0.0  1.43798E-06  293.0  end
cs-133    2  0.0  2.91472E-05  293.0  end
nd-143    2  0.0  2.22842E-05  293.0  end
nd-145    2  0.0  1.70912E-05  293.0  end
sm-147    2  0.0  1.21594E-06  293.0  end
sm-149    2  0.0  1.04634E-07  293.0  end
```

File ed24_f01_id09405_b50.mip

```
lfd.Nr.:   2 aus sha_alf.mod


mo-95     1  0.0  1.26482E-05  293.0  end
tc-99     1  0.0  1.95368E-05  293.0  end
ru-101    1  0.0  1.75918E-05  293.0  end
rh-103    1  0.0  9.00247E-06  293.0  end
ag-109    1  0.0  7.84850E-07  293.0  end
cs-133    1  0.0  2.04575E-05  293.0  end
nd-143    1  0.0  1.60256E-05  293.0  end
nd-145    1  0.0  1.21365E-05  293.0  end
sm-147    1  0.0  6.53922E-07  293.0  end
sm-149    1  0.0  1.00426E-07  293.0  end
sm-150    1  0.0  3.97195E-06  293.0  end
sm-151    1  0.0  3.89219E-07  293.0  end
sm-152    1  0.0  1.93048E-06  293.0  end
eu-153    1  0.0  1.07424E-06  293.0  end
gd-155    1  0.0  3.43221E-10  293.0  end
u-234     1  0.0  6.62234E-06  293.0  end
u-235     1  0.0  6.11882E-04  293.0  end
u-236     1  0.0  5.95161E-05  293.0  end
u-238     1  0.0  2.18235E-02  293.0  end
np-237    1  0.0  2.56224E-06  293.0  end
pu-238    1  0.0  2.82537E-07  293.0  end
pu-239    1  0.0  9.73220E-05  293.0  end
pu-240    1  0.0  1.57889E-05  293.0  end
pu-241    1  0.0  7.44622E-06  293.0  end
pu-242    1  0.0  6.91114E-07  293.0  end
am-241    1  0.0  9.13615E-08  293.0  end
am-243    1  0.0  4.11972E-08  293.0  end
o         1  0.0  4.58960E-02  293.0  end
mo-95     2  0.0  3.98296E-05  293.0  end
tc-99     2  0.0  4.57776E-05  293.0  end
ru-101    2  0.0  4.39881E-05  293.0  end
rh-103    2  0.0  2.30492E-05  293.0  end
ag-109    2  0.0  3.32577E-06  293.0  end
cs-133    2  0.0  4.71892E-05  293.0  end
nd-143    2  0.0  3.33345E-05  293.0  end
nd-145    2  0.0  2.73747E-05  293.0  end
sm-147    2  0.0  2.57287E-06  293.0  end
sm-149    2  0.0  1.02568E-07  293.0  end
```

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sm-150     2  0.0  6.07782E-06  293.0  end
sm-151     2  0.0  4.44308E-07  293.0  end
sm-152     2  0.0  2.80210E-06  293.0  end
eu-153     2  0.0  1.89643E-06  293.0  end
gd-155     2  0.0  5.57124E-10  293.0  end
u-234      2  0.0  6.03439E-06  293.0  end
u-235      2  0.0  4.99519E-04  293.0  end
u-236      2  0.0  7.82335E-05  293.0  end
u-238      2  0.0  2.17298E-02  293.0  end
np-237     2  0.0  4.56568E-06  293.0  end
pu-238     2  0.0  7.41492E-07  293.0  end
pu-239     2  0.0  1.16328E-04  293.0  end
pu-240     2  0.0  2.54122E-05  293.0  end
pu-241     2  0.0  1.42574E-05  293.0  end
pu-242     2  0.0  2.09726E-06  293.0  end
am-241     2  0.0  2.49228E-07  293.0  end
am-243     2  0.0  1.91755E-07  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  2.90427E-05  293.0  end
tc-99      3  0.0  3.54266E-05  293.0  end
ru-101     3  0.0  3.30957E-05  293.0  end
rh-103     3  0.0  1.76880E-05  293.0  end
ag-109     3  0.0  2.15539E-06  293.0  end
cs-133     3  0.0  3.68325E-05  293.0  end
nd-143     3  0.0  2.73465E-05  293.0  end
nd-145     3  0.0  2.14648E-05  293.0  end
sm-147     3  0.0  1.78074E-06  293.0  end
sm-149     3  0.0  1.05311E-07  293.0  end
sm-150     3  0.0  8.11454E-06  293.0  end
sm-151     3  0.0  4.89233E-07  293.0  end
sm-152     3  0.0  3.55372E-06  293.0  end
eu-153     3  0.0  2.79184E-06  293.0  end
gd-155     3  0.0  8.37506E-10  293.0  end
u-234      3  0.0  5.50475E-06  293.0  end
u-235      3  0.0  4.07826E-04  293.0  end
u-236      3  0.0  9.26287E-05  293.0  end
u-238      3  0.0  2.16368E-02  293.0  end
np-237     3  0.0  6.71084E-06  293.0  end
pu-238     3  0.0  1.44346E-06  293.0  end
pu-239     3  0.0  1.26732E-04  293.0  end
pu-240     3  0.0  3.40627E-05  293.0  end
pu-241     3  0.0  2.06501E-05  293.0  end
pu-242     3  0.0  4.23479E-06  293.0  end
am-241     3  0.0  4.48617E-07  293.0  end
am-243     3  0.0  5.14189E-07  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  3.66247E-05  293.0  end
tc-99      4  0.0  4.27056E-05  293.0  end
ru-101     4  0.0  4.06791E-05  293.0  end
rh-103     4  0.0  2.14951E-05  293.0  end
ag-109     4  0.0  2.95753E-06  293.0  end
cs-133     4  0.0  4.41455E-05  293.0  end
nd-143     4  0.0  3.16872E-05  293.0  end
nd-145     4  0.0  2.56340E-05  293.0  end
sm-147     4  0.0  2.34093E-06  293.0  end
sm-149     4  0.0  1.03755E-07  293.0  end
sm-150     4  0.0  1.01928E-05  293.0  end
sm-151     4  0.0  5.29238E-07  293.0  end
sm-152     4  0.0  4.25742E-06  293.0  end
eu-153     4  0.0  3.78002E-06  293.0  end
gd-155     4  0.0  1.19767E-09  293.0  end
u-234      4  0.0  4.99050E-06  293.0  end
u-235      4  0.0  3.27069E-04  293.0  end
u-236      4  0.0  1.04426E-04  293.0  end
u-238      4  0.0  2.15373E-02  293.0  end
np-237     4  0.0  8.98879E-06  293.0  end
pu-238     4  0.0  2.45348E-06  293.0  end
pu-239     4  0.0  1.32347E-04  293.0  end
pu-240     4  0.0  4.20805E-05  293.0  end
pu-241     4  0.0  2.64677E-05  293.0  end
pu-242     4  0.0  7.18613E-06  293.0  end
am-241     4  0.0  6.68443E-07  293.0  end
am-243     4  0.0  1.08205E-06  293.0  end
o          4  0.0  4.58960E-02  293.0  end
mo-95      5  0.0  3.87783E-05  293.0  end
tc-99      5  0.0  4.47706E-05  293.0  end
ru-101     5  0.0  4.28954E-05  293.0  end
```

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sm-150     2  0.0  1.10964E-05  293.0  end
sm-151     2  0.0  5.45081E-07  293.0  end
sm-152     2  0.0  4.54846E-06  293.0  end
eu-153     2  0.0  4.22833E-06  293.0  end
gd-155     2  0.0  1.37673E-09  293.0  end
u-234      2  0.0  4.77306E-06  293.0  end
u-235      2  0.0  2.95379E-04  293.0  end
u-236      2  0.0  1.08742E-04  293.0  end
u-238      2  0.0  2.14917E-02  293.0  end
np-237     2  0.0  9.99246E-06  293.0  end
pu-238     2  0.0  2.99116E-06  293.0  end
pu-239     2  0.0  1.33676E-04  293.0  end
pu-240     2  0.0  4.52922E-05  293.0  end
pu-241     2  0.0  2.87132E-05  293.0  end
pu-242     2  0.0  8.70806E-06  293.0  end
am-241     2  0.0  7.61991E-07  293.0  end
am-243     2  0.0  1.41614E-06  293.0  end
o          2  0.0  4.58960E-02  293.0  end
mo-95      3  0.0  5.06994E-05  293.0  end
tc-99      3  0.0  5.61459E-05  293.0  end
ru-101     3  0.0  5.57179E-05  293.0  end
rh-103     3  0.0  2.79821E-05  293.0  end
ag-109     3  0.0  4.69054E-06  293.0  end
cs-133     3  0.0  5.72281E-05  293.0  end
nd-143     3  0.0  3.79639E-05  293.0  end
nd-145     3  0.0  3.31608E-05  293.0  end
sm-147     3  0.0  3.29644E-06  293.0  end
sm-149     3  0.0  9.68565E-08  293.0  end
sm-150     3  0.0  1.42273E-05  293.0  end
sm-151     3  0.0  5.94146E-07  293.0  end
sm-152     3  0.0  5.50897E-06  293.0  end
eu-153     3  0.0  5.85408E-06  293.0  end
gd-155     3  0.0  2.10197E-09  293.0  end
u-234      3  0.0  4.03888E-06  293.0  end
u-235      3  0.0  1.99381E-04  293.0  end
u-236      3  0.0  1.20224E-04  293.0  end
u-238      3  0.0  2.13218E-02  293.0  end
np-237     3  0.0  1.34780E-05  293.0  end
pu-238     3  0.0  5.34761E-06  293.0  end
pu-239     3  0.0  1.34721E-04  293.0  end
pu-240     3  0.0  5.50798E-05  293.0  end
pu-241     3  0.0  3.50511E-05  293.0  end
pu-242     3  0.0  1.51762E-05  293.0  end
am-241     3  0.0  1.04439E-06  293.0  end
am-243     3  0.0  2.99423E-06  293.0  end
o          3  0.0  4.58960E-02  293.0  end
mo-95      4  0.0  5.96712E-05  293.0  end
tc-99      4  0.0  6.46007E-05  293.0  end
ru-101     4  0.0  6.60785E-05  293.0  end
rh-103     4  0.0  3.15433E-05  293.0  end
ag-109     4  0.0  5.93158E-06  293.0  end
cs-133     4  0.0  6.50896E-05  293.0  end
nd-143     4  0.0  4.05165E-05  293.0  end
nd-145     4  0.0  3.77725E-05  293.0  end
sm-147     4  0.0  3.77541E-06  293.0  end
sm-149     4  0.0  9.15997E-08  293.0  end
sm-150     4  0.0  1.68313E-05  293.0  end
sm-151     4  0.0  6.31352E-07  293.0  end
sm-152     4  0.0  6.26848E-06  293.0  end
eu-153     4  0.0  7.27784E-06  293.0  end
gd-155     4  0.0  2.85189E-09  293.0  end
u-234      4  0.0  3.44279E-06  293.0  end
u-235      4  0.0  1.34474E-04  293.0  end
u-236      4  0.0  1.25700E-04  293.0  end
u-238      4  0.0  2.11573E-02  293.0  end
np-237     4  0.0  1.62253E-05  293.0  end
pu-238     4  0.0  7.90604E-06  293.0  end
pu-239     4  0.0  1.32944E-04  293.0  end
pu-240     4  0.0  6.14878E-05  293.0  end
pu-241     4  0.0  3.86683E-05  293.0  end
pu-242     4  0.0  2.20178E-05  293.0  end
am-241     4  0.0  1.20020E-06  293.0  end
am-243     4  0.0  4.89767E-06  293.0  end
o          4  0.0  4.58960E-02  293.0  end
mo-95      5  0.0  6.23557E-05  293.0  end
tc-99      5  0.0  6.71035E-05  293.0  end
ru-101     5  0.0  6.93149E-05  293.0  end
```

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rh-103    5  0.0  2.25436E-05  293.0  end
ag-109    5  0.0  3.20316E-06  293.0  end
cs-133    5  0.0  4.61945E-05  293.0  end
nd-143    5  0.0  3.28074E-05  293.0  end
nd-145    5  0.0  2.68052E-05  293.0  end
sm-147    5  0.0  2.49741E-06  293.0  end
sm-149    5  0.0  1.02987E-07  293.0  end
sm-150    5  0.0  1.07987E-05  293.0  end
sm-151    5  0.0  5.39957E-07  293.0  end
sm-152    5  0.0  4.45337E-06  293.0  end
eu-153    5  0.0  4.07942E-06  293.0  end
gd-155    5  0.0  1.31625E-09  293.0  end
u-234     5  0.0  4.84439E-06  293.0  end
u-235     5  0.0  3.05613E-04  293.0  end
u-236     5  0.0  1.07369E-04  293.0  end
u-238     5  0.0  2.15068E-02  293.0  end
np-237    5  0.0  9.66112E-06  293.0  end
pu-238    5  0.0  2.80716E-06  293.0  end
pu-239    5  0.0  1.33299E-04  293.0  end
pu-240    5  0.0  4.42526E-05  293.0  end
pu-241    5  0.0  2.79931E-05  293.0  end
pu-242    5  0.0  8.19047E-06  293.0  end
am-241    5  0.0  7.31520E-07  293.0  end
am-243    5  0.0  1.29979E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  3.99245E-05  293.0  end
tc-99     6  0.0  4.58684E-05  293.0  end
ru-101    6  0.0  4.40871E-05  293.0  end
rh-103    6  0.0  2.30946E-05  293.0  end
ag-109    6  0.0  3.33693E-06  293.0  end
cs-133    6  0.0  4.72788E-05  293.0  end
nd-143    6  0.0  3.33814E-05  293.0  end
nd-145    6  0.0  2.74260E-05  293.0  end
sm-147    6  0.0  2.57964E-06  293.0  end
sm-149    6  0.0  1.02528E-07  293.0  end
sm-150    6  0.0  1.11233E-05  293.0  end
sm-151    6  0.0  5.45540E-07  293.0  end
sm-152    6  0.0  4.55702E-06  293.0  end
eu-153    6  0.0  4.24185E-06  293.0  end
gd-155    6  0.0  1.38227E-09  293.0  end
u-234     6  0.0  4.76663E-06  293.0  end
u-235     6  0.0  2.94463E-04  293.0  end
u-236     6  0.0  1.08863E-04  293.0  end
u-238     6  0.0  2.14903E-02  293.0  end
np-237    6  0.0  1.00225E-05  293.0  end
pu-238    6  0.0  3.00813E-06  293.0  end
pu-239    6  0.0  1.33708E-04  293.0  end
pu-240    6  0.0  4.53853E-05  293.0  end
pu-241    6  0.0  2.87773E-05  293.0  end
pu-242    6  0.0  8.75567E-06  293.0  end
am-241    6  0.0  7.64727E-07  293.0  end
am-243    6  0.0  1.42697E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  4.03020E-05  293.0  end
tc-99     7  0.0  4.62299E-05  293.0  end
ru-101    7  0.0  4.44816E-05  293.0  end
rh-103    7  0.0  2.32748E-05  293.0  end
ag-109    7  0.0  3.38145E-06  293.0  end
cs-133    7  0.0  4.76350E-05  293.0  end
nd-143    7  0.0  3.35671E-05  293.0  end
nd-145    7  0.0  2.76300E-05  293.0  end
sm-147    7  0.0  2.60653E-06  293.0  end
sm-149    7  0.0  1.02369E-07  293.0  end
sm-150    7  0.0  1.12305E-05  293.0  end
sm-151    7  0.0  5.47362E-07  293.0  end
sm-152    7  0.0  4.59108E-06  293.0  end
eu-153    7  0.0  4.29579E-06  293.0  end
gd-155    7  0.0  1.40447E-09  293.0  end
u-234     7  0.0  4.74102E-06  293.0  end
u-235     7  0.0  2.90831E-04  293.0  end
u-236     7  0.0  1.09344E-04  293.0  end
u-238     7  0.0  2.14850E-02  293.0  end
np-237    7  0.0  1.01420E-05  293.0  end
pu-238    7  0.0  3.07627E-06  293.0  end
pu-239    7  0.0  1.33828E-04  293.0  end
pu-240    7  0.0  4.57545E-05  293.0  end
pu-241    7  0.0  2.90311E-05  293.0  end
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```
rh-103    5  0.0  3.24996E-05  293.0  end
ag-109    5  0.0  6.31933E-06  293.0  end
cs-133    5  0.0  6.73489E-05  293.0  end
nd-143    5  0.0  4.10339E-05  293.0  end
nd-145    5  0.0  3.91194E-05  293.0  end
sm-147    5  0.0  3.89147E-06  293.0  end
sm-149    5  0.0  8.98022E-08  293.0  end
sm-150    5  0.0  1.76014E-05  293.0  end
sm-151    5  0.0  6.41671E-07  293.0  end
sm-152    5  0.0  6.49009E-06  293.0  end
eu-153    5  0.0  7.70931E-06  293.0  end
gd-155    5  0.0  3.09657E-09  293.0  end
u-234     5  0.0  3.26786E-06  293.0  end
u-235     5  0.0  1.17748E-04  293.0  end
u-236     5  0.0  1.26596E-04  293.0  end
u-238     5  0.0  2.11030E-02  293.0  end
np-237    5  0.0  1.70381E-05  293.0  end
pu-238    5  0.0  8.76042E-06  293.0  end
pu-239    5  0.0  1.32133E-04  293.0  end
pu-240    5  0.0  6.30944E-05  293.0  end
pu-241    5  0.0  3.94419E-05  293.0  end
pu-242    5  0.0  2.43086E-05  293.0  end
am-241    5  0.0  1.22961E-06  293.0  end
am-243    5  0.0  5.58383E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  6.36571E-05  293.0  end
tc-99     6  0.0  6.83111E-05  293.0  end
ru-101    6  0.0  7.09080E-05  293.0  end
rh-103    6  0.0  3.29433E-05  293.0  end
ag-109    6  0.0  6.50953E-06  293.0  end
cs-133    6  0.0  6.84264E-05  293.0  end
nd-143    6  0.0  4.12433E-05  293.0  end
nd-145    6  0.0  3.97662E-05  293.0  end
sm-147    6  0.0  3.94272E-06  293.0  end
sm-149    6  0.0  8.89642E-08  293.0  end
sm-150    6  0.0  1.79721E-05  293.0  end
sm-151    6  0.0  6.46598E-07  293.0  end
sm-152    6  0.0  6.59633E-06  293.0  end
eu-153    6  0.0  7.91861E-06  293.0  end
gd-155    6  0.0  3.22016E-09  293.0  end
u-234     6  0.0  3.18388E-06  293.0  end
u-235     6  0.0  1.10104E-04  293.0  end
u-236     6  0.0  1.26903E-04  293.0  end
u-238     6  0.0  2.10755E-02  293.0  end
np-237    6  0.0  1.74145E-05  293.0  end
pu-238    6  0.0  9.18775E-06  293.0  end
pu-239    6  0.0  1.31720E-04  293.0  end
pu-240    6  0.0  6.38149E-05  293.0  end
pu-241    6  0.0  3.97716E-05  293.0  end
pu-242    6  0.0  2.54552E-05  293.0  end
am-241    6  0.0  1.24098E-06  293.0  end
am-243    6  0.0  5.93717E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.41949E-05  293.0  end
tc-99     7  0.0  6.88092E-05  293.0  end
ru-101    7  0.0  7.15712E-05  293.0  end
rh-103    7  0.0  3.31227E-05  293.0  end
ag-109    7  0.0  6.58854E-06  293.0  end
cs-133    7  0.0  6.88684E-05  293.0  end
nd-143    7  0.0  4.13220E-05  293.0  end
nd-145    7  0.0  4.00320E-05  293.0  end
sm-147    7  0.0  3.96292E-06  293.0  end
sm-149    7  0.0  8.86158E-08  293.0  end
sm-150    7  0.0  1.81246E-05  293.0  end
sm-151    7  0.0  6.48610E-07  293.0  end
sm-152    7  0.0  6.64004E-06  293.0  end
eu-153    7  0.0  8.00504E-06  293.0  end
gd-155    7  0.0  3.27190E-09  293.0  end
u-234     7  0.0  3.14936E-06  293.0  end
u-235     7  0.0  1.07033E-04  293.0  end
u-236     7  0.0  1.27003E-04  293.0  end
u-238     7  0.0  2.10638E-02  293.0  end
np-237    7  0.0  1.75686E-05  293.0  end
pu-238    7  0.0  9.36658E-06  293.0  end
pu-239    7  0.0  1.31543E-04  293.0  end
pu-240    7  0.0  6.41029E-05  293.0  end
pu-241    7  0.0  3.98988E-05  293.0  end
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```
pu-242     7  0.0  8.94661E-06  293.0  end
am-241     7  0.0  7.75585E-07  293.0  end
am-243     7  0.0  1.47055E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.95792E-05  293.0  end
tc-99      8  0.0  4.55378E-05  293.0  end
ru-101     8  0.0  4.37271E-05  293.0  end
rh-103     8  0.0  2.29293E-05  293.0  end
ag-109     8  0.0  3.29641E-06  293.0  end
cs-133     8  0.0  4.69526E-05  293.0  end
nd-143     8  0.0  3.32102E-05  293.0  end
nd-145     8  0.0  2.72393E-05  293.0  end
sm-147     8  0.0  2.55497E-06  293.0  end
sm-149     8  0.0  1.02671E-07  293.0  end
sm-150     8  0.0  1.10254E-05  293.0  end
sm-151     8  0.0  5.43866E-07  293.0  end
sm-152     8  0.0  4.52584E-06  293.0  end
eu-153     8  0.0  4.19271E-06  293.0  end
gd-155     8  0.0  1.36216E-09  293.0  end
u-234      8  0.0  4.79005E-06  293.0  end
u-235      8  0.0  2.97803E-04  293.0  end
u-236      8  0.0  1.08419E-04  293.0  end
u-238      8  0.0  2.14952E-02  293.0  end
np-237     8  0.0  9.91337E-06  293.0  end
pu-238     8  0.0  2.94667E-06  293.0  end
pu-239     8  0.0  1.33592E-04  293.0  end
pu-240     8  0.0  4.50459E-05  293.0  end
pu-241     8  0.0  2.85432E-05  293.0  end
pu-242     8  0.0  8.58315E-06  293.0  end
am-241     8  0.0  7.54760E-07  293.0  end
am-243     8  0.0  1.38782E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  3.85161E-05  293.0  end
tc-99      9  0.0  4.45193E-05  293.0  end
ru-101     9  0.0  4.26241E-05  293.0  end
rh-103     9  0.0  2.24167E-05  293.0  end
ag-109     9  0.0  3.17286E-06  293.0  end
cs-133     9  0.0  4.59459E-05  293.0  end
nd-143     9  0.0  3.26739E-05  293.0  end
nd-145     9  0.0  2.66628E-05  293.0  end
sm-147     9  0.0  2.47847E-06  293.0  end
sm-149     9  0.0  1.03087E-07  293.0  end
sm-150     9  0.0  1.07246E-05  293.0  end
sm-151     9  0.0  5.38669E-07  293.0  end
sm-152     9  0.0  4.42961E-06  293.0  end
eu-153     9  0.0  4.04254E-06  293.0  end
gd-155     9  0.0  1.30144E-09  293.0  end
u-234      9  0.0  4.86219E-06  293.0  end
u-235      9  0.0  3.08189E-04  293.0  end
u-236      9  0.0  1.07020E-04  293.0  end
u-238      9  0.0  2.15106E-02  293.0  end
np-237     9  0.0  9.57877E-06  293.0  end
pu-238     9  0.0  2.76242E-06  293.0  end
pu-239     9  0.0  1.33196E-04  293.0  end
pu-240     9  0.0  4.39911E-05  293.0  end
pu-241     9  0.0  2.78109E-05  293.0  end
pu-242     9  0.0  8.06416E-06  293.0  end
am-241     9  0.0  7.23880E-07  293.0  end
am-243     9  0.0  1.27181E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  3.77225E-05  293.0  end
tc-99     10  0.0  4.37585E-05  293.0  end
ru-101    10  0.0  4.18054E-05  293.0  end
rh-103    10  0.0  2.20313E-05  293.0  end
ag-109    10  0.0  3.08180E-06  293.0  end
cs-133    10  0.0  4.51918E-05  293.0  end
nd-143    10  0.0  3.22648E-05  293.0  end
nd-145    10  0.0  2.62314E-05  293.0  end
sm-147    10  0.0  2.42095E-06  293.0  end
sm-149    10  0.0  1.03377E-07  293.0  end
sm-150    10  0.0  1.05008E-05  293.0  end
sm-151    10  0.0  5.34741E-07  293.0  end
sm-152    10  0.0  4.35752E-06  293.0  end
eu-153    10  0.0  3.93163E-06  293.0  end
gd-155    10  0.0  1.25724E-09  293.0  end
u-234     10  0.0  4.91605E-06  293.0  end
u-235     10  0.0  3.16048E-04  293.0  end
```

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pu-242     7  0.0  2.59358E-05  293.0  end
am-241     7  0.0  1.24514E-06  293.0  end
am-243     7  0.0  6.08700E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.35416E-05  293.0  end
tc-99      8  0.0  6.82041E-05  293.0  end
ru-101     8  0.0  7.07660E-05  293.0  end
rh-103     8  0.0  3.29044E-05  293.0  end
ag-109     8  0.0  6.49260E-06  293.0  end
cs-133     8  0.0  6.83313E-05  293.0  end
nd-143     8  0.0  4.12258E-05  293.0  end
nd-145     8  0.0  3.97090E-05  293.0  end
sm-147     8  0.0  3.93831E-06  293.0  end
sm-149     8  0.0  8.90389E-08  293.0  end
sm-150     8  0.0  1.79393E-05  293.0  end
sm-151     8  0.0  6.46165E-07  293.0  end
sm-152     8  0.0  6.58693E-06  293.0  end
eu-153     8  0.0  7.90004E-06  293.0  end
gd-155     8  0.0  3.20910E-09  293.0  end
u-234      8  0.0  3.19131E-06  293.0  end
u-235      8  0.0  1.10770E-04  293.0  end
u-236      8  0.0  1.26880E-04  293.0  end
u-238      8  0.0  2.10779E-02  293.0  end
np-237     8  0.0  1.73813E-05  293.0  end
pu-238     8  0.0  9.14952E-06  293.0  end
pu-239     8  0.0  1.31758E-04  293.0  end
pu-240     8  0.0  6.37523E-05  293.0  end
pu-241     8  0.0  3.97436E-05  293.0  end
pu-242     8  0.0  2.53525E-05  293.0  end
am-241     8  0.0  1.24005E-06  293.0  end
am-243     8  0.0  5.90529E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  6.25017E-05  293.0  end
tc-99      9  0.0  6.72392E-05  293.0  end
ru-101     9  0.0  6.94929E-05  293.0  end
rh-103     9  0.0  3.25501E-05  293.0  end
ag-109     9  0.0  6.34060E-06  293.0  end
cs-133     9  0.0  6.74704E-05  293.0  end
nd-143     9  0.0  4.10587E-05  293.0  end
nd-145     9  0.0  3.91922E-05  293.0  end
sm-147     9  0.0  3.89739E-06  293.0  end
sm-149     9  0.0  8.97077E-08  293.0  end
sm-150     9  0.0  1.76431E-05  293.0  end
sm-151     9  0.0  6.42227E-07  293.0  end
sm-152     9  0.0  6.50205E-06  293.0  end
eu-153     9  0.0  7.73280E-06  293.0  end
gd-155     9  0.0  3.11030E-09  293.0  end
u-234      9  0.0  3.25841E-06  293.0  end
u-235      9  0.0  1.16875E-04  293.0  end
u-236      9  0.0  1.26635E-04  293.0  end
u-238      9  0.0  2.10999E-02  293.0  end
np-237     9  0.0  1.70808E-05  293.0  end
pu-238     9  0.0  8.80797E-06  293.0  end
pu-239     9  0.0  1.32088E-04  293.0  end
pu-240     9  0.0  6.31770E-05  293.0  end
pu-241     9  0.0  3.94804E-05  293.0  end
pu-242     9  0.0  2.44361E-05  293.0  end
am-241     9  0.0  1.23098E-06  293.0  end
am-243     9  0.0  5.62282E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  6.17218E-05  293.0  end
tc-99     10  0.0  6.65140E-05  293.0  end
ru-101    10  0.0  6.85447E-05  293.0  end
rh-103    10  0.0  3.22787E-05  293.0  end
ag-109    10  0.0  6.22720E-06  293.0  end
cs-133    10  0.0  6.68198E-05  293.0  end
nd-143    10  0.0  4.09220E-05  293.0  end
nd-145    10  0.0  3.88028E-05  293.0  end
sm-147    10  0.0  3.86531E-06  293.0  end
sm-149    10  0.0  9.02193E-08  293.0  end
sm-150    10  0.0  1.74200E-05  293.0  end
sm-151    10  0.0  6.39260E-07  293.0  end
sm-152    10  0.0  6.43806E-06  293.0  end
eu-153    10  0.0  7.60737E-06  293.0  end
gd-155    10  0.0  3.03756E-09  293.0  end
u-234     10  0.0  3.30897E-06  293.0  end
u-235     10  0.0  1.21581E-04  293.0  end
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u-236    10  0.0  1.05949E-04  293.0  end
u-238    10  0.0  2.15221E-02  293.0  end
np-237   10  0.0  9.33031E-06  293.0  end
pu-238   10  0.0  2.62984E-06  293.0  end
pu-239   10  0.0  1.32863E-04  293.0  end
pu-240   10  0.0  4.31944E-05  293.0  end
pu-241   10  0.0  2.72534E-05  293.0  end
pu-242   10  0.0  7.68866E-06  293.0  end
am-241   10  0.0  7.00676E-07  293.0  end
am-243   10  0.0  1.18964E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  3.71022E-05  293.0  end
tc-99    11  0.0  4.31635E-05  293.0  end
ru-101   11  0.0  4.11680E-05  293.0  end
rh-103   11  0.0  2.17288E-05  293.0  end
ag-109   11  0.0  3.01133E-06  293.0  end
cs-133   11  0.0  4.46009E-05  293.0  end
nd-143   11  0.0  3.19401E-05  293.0  end
nd-145   11  0.0  2.58940E-05  293.0  end
sm-147   11  0.0  2.37580E-06  293.0  end
sm-149   11  0.0  1.03595E-07  293.0  end
sm-150   11  0.0  1.03265E-05  293.0  end
sm-151   11  0.0  5.31640E-07  293.0  end
sm-152   11  0.0  4.30100E-06  293.0  end
eu-153   11  0.0  3.84571E-06  293.0  end
gd-155   11  0.0  1.22334E-09  293.0  end
u-234    11  0.0  4.95812E-06  293.0  end
u-235    11  0.0  3.22255E-04  293.0  end
u-236    11  0.0  1.05095E-04  293.0  end
u-238    11  0.0  2.15307E-02  293.0  end
np-237   11  0.0  9.13701E-06  293.0  end
pu-238   11  0.0  2.52920E-06  293.0  end
pu-239   11  0.0  1.32580E-04  293.0  end
pu-240   11  0.0  4.25667E-05  293.0  end
pu-241   11  0.0  2.68115E-05  293.0  end
pu-242   11  0.0  7.40231E-06  293.0  end
am-241   11  0.0  6.82477E-07  293.0  end
am-243   11  0.0  1.12799E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  3.55003E-05  293.0  end
tc-99    12  0.0  4.16718E-05  293.0  end
ru-101   12  0.0  4.03882E-05  293.0  end
rh-103   12  0.0  2.20541E-05  293.0  end
ag-109   12  0.0  3.17115E-06  293.0  end
cs-133   12  0.0  4.28646E-05  293.0  end
nd-143   12  0.0  3.22871E-05  293.0  end
nd-145   12  0.0  2.49262E-05  293.0  end
sm-147   12  0.0  2.08961E-06  293.0  end
sm-149   12  0.0  1.58444E-07  293.0  end
sm-150   12  0.0  1.02803E-05  293.0  end
sm-151   12  0.0  7.49002E-07  293.0  end
sm-152   12  0.0  4.01113E-06  293.0  end
eu-153   12  0.0  3.92655E-06  293.0  end
gd-155   12  0.0  2.09893E-09  293.0  end
u-234    12  0.0  4.69469E-06  293.0  end
u-235    12  0.0  3.68617E-04  293.0  end
u-236    12  0.0  1.03762E-04  293.0  end
u-238    12  0.0  2.14328E-02  293.0  end
np-237   12  0.0  1.10775E-05  293.0  end
pu-238   12  0.0  3.28285E-06  293.0  end
pu-239   12  0.0  1.88202E-04  293.0  end
pu-240   12  0.0  4.69401E-05  293.0  end
pu-241   12  0.0  3.41111E-05  293.0  end
pu-242   12  0.0  7.30679E-06  293.0  end
am-241   12  0.0  8.89957E-07  293.0  end
am-243   12  0.0  1.32146E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  3.47703E-05  293.0  end
tc-99    13  0.0  4.09698E-05  293.0  end
ru-101   13  0.0  3.96259E-05  293.0  end
rh-103   13  0.0  2.16607E-05  293.0  end
ag-109   13  0.0  3.08569E-06  293.0  end
cs-133   13  0.0  4.21720E-05  293.0  end
nd-143   13  0.0  3.18230E-05  293.0  end
nd-145   13  0.0  2.45262E-05  293.0  end
sm-147   13  0.0  2.04237E-06  293.0  end
sm-149   13  0.0  1.58092E-07  293.0  end
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u-236    10  0.0  1.26415E-04  293.0  end
u-238    10  0.0  2.11161E-02  293.0  end
np-237   10  0.0  1.68507E-05  293.0  end
pu-238   10  0.0  8.55527E-06  293.0  end
pu-239   10  0.0  1.32328E-04  293.0  end
pu-240   10  0.0  6.27298E-05  293.0  end
pu-241   10  0.0  3.92710E-05  293.0  end
pu-242   10  0.0  2.37585E-05  293.0  end
am-241   10  0.0  1.22340E-06  293.0  end
am-243   10  0.0  5.41663E-06  293.0  end
o        10  0.0  4.58960E-02  293.0  end
mo-95    11  0.0  6.12090E-05  293.0  end
tc-99    11  0.0  6.60364E-05  293.0  end
ru-101   11  0.0  6.79243E-05  293.0  end
rh-103   11  0.0  3.20976E-05  293.0  end
ag-109   11  0.0  6.15292E-06  293.0  end
cs-133   11  0.0  6.63898E-05  293.0  end
nd-143   11  0.0  4.08269E-05  293.0  end
nd-145   11  0.0  3.85459E-05  293.0  end
sm-147   11  0.0  3.84357E-06  293.0  end
sm-149   11  0.0  9.05696E-08  293.0  end
sm-150   11  0.0  1.72731E-05  293.0  end
sm-151   11  0.0  6.37318E-07  293.0  end
sm-152   11  0.0  6.39579E-06  293.0  end
eu-153   11  0.0  7.52494E-06  293.0  end
gd-155   11  0.0  2.99063E-09  293.0  end
u-234    11  0.0  3.34231E-06  293.0  end
u-235    11  0.0  1.24735E-04  293.0  end
u-236    11  0.0  1.26254E-04  293.0  end
u-238    11  0.0  2.11266E-02  293.0  end
np-237   11  0.0  1.66955E-05  293.0  end
pu-238   11  0.0  8.39082E-06  293.0  end
pu-239   11  0.0  1.32485E-04  293.0  end
pu-240   11  0.0  6.24273E-05  293.0  end
pu-241   11  0.0  3.91285E-05  293.0  end
pu-242   11  0.0  2.33174E-05  293.0  end
am-241   11  0.0  1.21804E-06  293.0  end
am-243   11  0.0  5.28382E-06  293.0  end
o        11  0.0  4.58960E-02  293.0  end
mo-95    12  0.0  5.89852E-05  293.0  end
tc-99    12  0.0  6.39658E-05  293.0  end
ru-101   12  0.0  6.66326E-05  293.0  end
rh-103   12  0.0  3.37888E-05  293.0  end
ag-109   12  0.0  6.24551E-06  293.0  end
cs-133   12  0.0  6.39791E-05  293.0  end
nd-143   12  0.0  4.52460E-05  293.0  end
nd-145   12  0.0  3.74543E-05  293.0  end
sm-147   12  0.0  3.36757E-06  293.0  end
sm-149   12  0.0  1.62815E-07  293.0  end
sm-150   12  0.0  1.71725E-05  293.0  end
sm-151   12  0.0  1.01846E-06  293.0  end
sm-152   12  0.0  5.94121E-06  293.0  end
eu-153   12  0.0  7.47854E-06  293.0  end
gd-155   12  0.0  5.96845E-09  293.0  end
u-234    12  0.0  3.16419E-06  293.0  end
u-235    12  0.0  1.85468E-04  293.0  end
u-236    12  0.0  1.24429E-04  293.0  end
u-238    12  0.0  2.09777E-02  293.0  end
np-237   12  0.0  2.00338E-05  293.0  end
pu-238   12  0.0  1.07408E-05  293.0  end
pu-239   12  0.0  2.11309E-04  293.0  end
pu-240   12  0.0  7.16232E-05  293.0  end
pu-241   12  0.0  5.52386E-05  293.0  end
pu-242   12  0.0  2.12455E-05  293.0  end
am-241   12  0.0  1.95246E-06  293.0  end
am-243   12  0.0  5.50387E-06  293.0  end
o        12  0.0  4.58960E-02  293.0  end
mo-95    13  0.0  5.81452E-05  293.0  end
tc-99    13  0.0  6.31818E-05  293.0  end
ru-101   13  0.0  6.56329E-05  293.0  end
rh-103   13  0.0  3.34060E-05  293.0  end
ag-109   13  0.0  6.12685E-06  293.0  end
cs-133   13  0.0  6.32701E-05  293.0  end
nd-143   13  0.0  4.48518E-05  293.0  end
nd-145   13  0.0  3.70186E-05  293.0  end
sm-147   13  0.0  3.33277E-06  293.0  end
sm-149   13  0.0  1.62790E-07  293.0  end
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sm-150   13  0.0  1.00704E-05  293.0  end
sm-151   13  0.0  7.40535E-07  293.0  end
sm-152   13  0.0  3.94760E-06  293.0  end
eu-153   13  0.0  3.82381E-06  293.0  end
gd-155   13  0.0  2.01912E-09  293.0  end
u-234    13  0.0  4.74625E-06  293.0  end
u-235    13  0.0  3.75519E-04  293.0  end
u-236    13  0.0  1.02750E-04  293.0  end
u-238    13  0.0  2.14449E-02  293.0  end
np-237   13  0.0  1.07994E-05  293.0  end
pu-238   13  0.0  3.13132E-06  293.0  end
pu-239   13  0.0  1.87034E-04  293.0  end
pu-240   13  0.0  4.60643E-05  293.0  end
pu-241   13  0.0  3.33465E-05  293.0  end
pu-242   13  0.0  6.99086E-06  293.0  end
am-241   13  0.0  8.57613E-07  293.0  end
am-243   13  0.0  1.24251E-06  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  3.36503E-05  293.0  end
tc-99    14  0.0  3.98934E-05  293.0  end
ru-101   14  0.0  3.84644E-05  293.0  end
rh-103   14  0.0  2.10564E-05  293.0  end
ag-109   14  0.0  2.95617E-06  293.0  end
cs-133   14  0.0  4.11080E-05  293.0  end
nd-143   14  0.0  3.11044E-05  293.0  end
nd-145   14  0.0  2.39117E-05  293.0  end
sm-147   14  0.0  1.96954E-06  293.0  end
sm-149   14  0.0  1.57521E-07  293.0  end
sm-150   14  0.0  9.74980E-06  293.0  end
sm-151   14  0.0  7.27564E-07  293.0  end
sm-152   14  0.0  3.84958E-06  293.0  end
eu-153   14  0.0  3.66778E-06  293.0  end
gd-155   14  0.0  1.90097E-09  293.0  end
u-234    14  0.0  4.82575E-06  293.0  end
u-235    14  0.0  3.86239E-04  293.0  end
u-236    14  0.0  1.01160E-04  293.0  end
u-238    14  0.0  2.14635E-02  293.0  end
np-237   14  0.0  1.03746E-05  293.0  end
pu-238   14  0.0  2.90787E-06  293.0  end
pu-239   14  0.0  1.85170E-04  293.0  end
pu-240   14  0.0  4.47126E-05  293.0  end
pu-241   14  0.0  3.21654E-05  293.0  end
pu-242   14  0.0  6.52088E-06  293.0  end
am-241   14  0.0  8.08648E-07  293.0  end
am-243   14  0.0  1.12732E-06  293.0  end
o        14  0.0  4.58960E-02  293.0  end
mo-95    15  0.0  3.18747E-05  293.0  end
tc-99    15  0.0  3.81865E-05  293.0  end
ru-101   15  0.0  3.66371E-05  293.0  end
rh-103   15  0.0  2.00919E-05  293.0  end
ag-109   15  0.0  2.75461E-06  293.0  end
cs-133   15  0.0  3.94126E-05  293.0  end
nd-143   15  0.0  2.99492E-05  293.0  end
nd-145   15  0.0  2.29344E-05  293.0  end
sm-147   15  0.0  1.85309E-06  293.0  end
sm-149   15  0.0  1.56507E-07  293.0  end
sm-150   15  0.0  9.24455E-06  293.0  end
sm-151   15  0.0  7.06978E-07  293.0  end
sm-152   15  0.0  3.69315E-06  293.0  end
eu-153   15  0.0  3.42425E-06  293.0  end
gd-155   15  0.0  1.72412E-09  293.0  end
u-234    15  0.0  4.95257E-06  293.0  end
u-235    15  0.0  4.03591E-04  293.0  end
u-236    15  0.0  9.85388E-05  293.0  end
u-238    15  0.0  2.14923E-02  293.0  end
np-237   15  0.0  9.70838E-06  293.0  end
pu-238   15  0.0  2.57506E-06  293.0  end
pu-239   15  0.0  1.82032E-04  293.0  end
pu-240   15  0.0  4.25490E-05  293.0  end
pu-241   15  0.0  3.02743E-05  293.0  end
pu-242   15  0.0  5.81108E-06  293.0  end
am-241   15  0.0  7.32731E-07  293.0  end
am-243   15  0.0  9.59052E-07  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  2.92630E-05  293.0  end
tc-99    16  0.0  3.56726E-05  293.0  end
ru-101   16  0.0  3.39805E-05  293.0  end
```

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sm-150   13  0.0  1.69264E-05  293.0  end
sm-151   13  0.0  1.00893E-06  293.0  end
sm-152   13  0.0  5.87595E-06  293.0  end
eu-153   13  0.0  7.34783E-06  293.0  end
gd-155   13  0.0  5.78279E-09  293.0  end
u-234    13  0.0  3.21365E-06  293.0  end
u-235    13  0.0  1.90732E-04  293.0  end
u-236    13  0.0  1.24088E-04  293.0  end
u-238    13  0.0  2.09964E-02  293.0  end
np-237   13  0.0  1.97225E-05  293.0  end
pu-238   13  0.0  1.03892E-05  293.0  end
pu-239   13  0.0  2.10837E-04  293.0  end
pu-240   13  0.0  7.08776E-05  293.0  end
pu-241   13  0.0  5.46243E-05  293.0  end
pu-242   13  0.0  2.06339E-05  293.0  end
am-241   13  0.0  1.91760E-06  293.0  end
am-243   13  0.0  5.29812E-06  293.0  end
o        13  0.0  4.58960E-02  293.0  end
mo-95    14  0.0  5.67702E-05  293.0  end
tc-99    14  0.0  6.18960E-05  293.0  end
ru-101   14  0.0  6.40068E-05  293.0  end
rh-103   14  0.0  3.27735E-05  293.0  end
ag-109   14  0.0  5.93369E-06  293.0  end
cs-133   14  0.0  6.21011E-05  293.0  end
nd-143   14  0.0  4.41957E-05  293.0  end
nd-145   14  0.0  3.63037E-05  293.0  end
sm-147   14  0.0  3.27372E-06  293.0  end
sm-149   14  0.0  1.62711E-07  293.0  end
sm-150   14  0.0  1.65226E-05  293.0  end
sm-151   14  0.0  9.93318E-07  293.0  end
sm-152   14  0.0  5.76859E-06  293.0  end
eu-153   14  0.0  7.13362E-06  293.0  end
gd-155   14  0.0  5.48548E-09  293.0  end
u-234    14  0.0  3.29553E-06  293.0  end
u-235    14  0.0  1.99550E-04  293.0  end
u-236    14  0.0  1.23472E-04  293.0  end
u-238    14  0.0  2.10262E-02  293.0  end
np-237   14  0.0  1.92622E-05  293.0  end
pu-238   14  0.0  9.82799E-06  293.0  end
pu-239   14  0.0  2.10043E-04  293.0  end
pu-240   14  0.0  6.96585E-05  293.0  end
pu-241   14  0.0  5.35700E-05  293.0  end
pu-242   14  0.0  1.96511E-05  293.0  end
am-241   14  0.0  1.85958E-06  293.0  end
am-243   14  0.0  4.96822E-06  293.0  end
o        14  0.0  4.58960E-02  293.0  end
mo-95    15  0.0  5.44836E-05  293.0  end
tc-99    15  0.0  5.97506E-05  293.0  end
ru-101   15  0.0  6.13299E-05  293.0  end
rh-103   15  0.0  3.17026E-05  293.0  end
ag-109   15  0.0  5.61562E-06  293.0  end
cs-133   15  0.0  6.01334E-05  293.0  end
nd-143   15  0.0  4.30734E-05  293.0  end
nd-145   15  0.0  3.51086E-05  293.0  end
sm-147   15  0.0  3.17009E-06  293.0  end
sm-149   15  0.0  1.62569E-07  293.0  end
sm-150   15  0.0  1.58494E-05  293.0  end
sm-151   15  0.0  9.67307E-07  293.0  end
sm-152   15  0.0  5.58826E-06  293.0  end
eu-153   15  0.0  6.77780E-06  293.0  end
gd-155   15  0.0  5.01444E-09  293.0  end
u-234    15  0.0  3.43436E-06  293.0  end
u-235    15  0.0  2.14776E-04  293.0  end
u-236    15  0.0  1.22265E-04  293.0  end
u-238    15  0.0  2.10753E-02  293.0  end
np-237   15  0.0  1.84416E-05  293.0  end
pu-238   15  0.0  8.92522E-06  293.0  end
pu-239   15  0.0  2.08586E-04  293.0  end
pu-240   15  0.0  6.75419E-05  293.0  end
pu-241   15  0.0  5.17740E-05  293.0  end
pu-242   15  0.0  1.80557E-05  293.0  end
am-241   15  0.0  1.76066E-06  293.0  end
am-243   15  0.0  4.44685E-06  293.0  end
o        15  0.0  4.58960E-02  293.0  end
mo-95    16  0.0  5.09290E-05  293.0  end
tc-99    16  0.0  5.63971E-05  293.0  end
ru-101   16  0.0  5.72361E-05  293.0  end
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rh-103   16  0.0  1.86627E-05  293.0  end
ag-109   16  0.0  2.46676E-06  293.0  end
cs-133   16  0.0  3.69003E-05  293.0  end
nd-143   16  0.0  2.82133E-05  293.0  end
nd-145   16  0.0  2.14914E-05  293.0  end
sm-147   16  0.0  1.68059E-06  293.0  end
sm-149   16  0.0  1.54781E-07  293.0  end
sm-150   16  0.0  8.50893E-06  293.0  end
sm-151   16  0.0  6.76677E-07  293.0  end
sm-152   16  0.0  3.46028E-06  293.0  end
eu-153   16  0.0  3.07522E-06  293.0  end
gd-155   16  0.0  1.48630E-09  293.0  end
u-234    16  0.0  5.14101E-06  293.0  end
u-235    16  0.0  4.29922E-04  293.0  end
u-236    16  0.0  9.44464E-05  293.0  end
u-238    16  0.0  2.15333E-02  293.0  end
np-237   16  0.0  8.74397E-06  293.0  end
pu-238   16  0.0  2.13179E-06  293.0  end
pu-239   16  0.0  1.76977E-04  293.0  end
pu-240   16  0.0  3.93257E-05  293.0  end
pu-241   16  0.0  2.74606E-05  293.0  end
pu-242   16  0.0  4.84553E-06  293.0  end
am-241   16  0.0  6.25484E-07  293.0  end
am-243   16  0.0  7.42792E-07  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  2.49846E-05  293.0  end
tc-99    17  0.0  3.15498E-05  293.0  end
ru-101   17  0.0  2.97112E-05  293.0  end
rh-103   17  0.0  1.62961E-05  293.0  end
ag-109   17  0.0  2.01934E-06  293.0  end
cs-133   17  0.0  3.27452E-05  293.0  end
nd-143   17  0.0  2.52787E-05  293.0  end
nd-145   17  0.0  1.91118E-05  293.0  end
sm-147   17  0.0  1.39790E-06  293.0  end
sm-149   17  0.0  1.51262E-07  293.0  end
sm-150   17  0.0  7.32690E-06  293.0  end
sm-151   17  0.0  6.27006E-07  293.0  end
sm-152   17  0.0  3.07161E-06  293.0  end
eu-153   17  0.0  2.53023E-06  293.0  end
gd-155   17  0.0  1.15135E-09  293.0  end
u-234    17  0.0  5.45399E-06  293.0  end
u-235    17  0.0  4.75122E-04  293.0  end
u-236    17  0.0  8.71458E-05  293.0  end
u-238    17  0.0  2.15984E-02  293.0  end
np-237   17  0.0  7.21537E-06  293.0  end
pu-238   17  0.0  1.51896E-06  293.0  end
pu-239   17  0.0  1.67460E-04  293.0  end
pu-240   17  0.0  3.39682E-05  293.0  end
pu-241   17  0.0  2.28112E-05  293.0  end
pu-242   17  0.0  3.46675E-06  293.0  end
am-241   17  0.0  4.63818E-07  293.0  end
am-243   17  0.0  4.63625E-07  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  1.73104E-05  293.0  end
tc-99    18  0.0  2.41222E-05  293.0  end
ru-101   18  0.0  2.22734E-05  293.0  end
rh-103   18  0.0  1.19898E-05  293.0  end
ag-109   18  0.0  1.29862E-06  293.0  end
cs-133   18  0.0  2.51558E-05  293.0  end
nd-143   18  0.0  1.97172E-05  293.0  end
nd-145   18  0.0  1.47806E-05  293.0  end
sm-147   18  0.0  9.06763E-07  293.0  end
sm-149   18  0.0  1.42348E-07  293.0  end
sm-150   18  0.0  5.28886E-06  293.0  end
sm-151   18  0.0  5.37314E-07  293.0  end
sm-152   18  0.0  2.34710E-06  293.0  end
eu-153   18  0.0  1.64874E-06  293.0  end
gd-155   18  0.0  7.01769E-10  293.0  end
u-234    18  0.0  6.02958E-06  293.0  end
u-235    18  0.0  5.63255E-04  293.0  end
u-236    18  0.0  7.20874E-05  293.0  end
u-238    18  0.0  2.17085E-02  293.0  end
np-237   18  0.0  4.70199E-06  293.0  end
pu-238   18  0.0  7.31742E-07  293.0  end
pu-239   18  0.0  1.45650E-04  293.0  end
pu-240   18  0.0  2.42397E-05  293.0  end
pu-241   18  0.0  1.46019E-05  293.0  end
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rh-103   16  0.0  2.99927E-05  293.0  end
ag-109   16  0.0  5.12974E-06  293.0  end
cs-133   16  0.0  5.70213E-05  293.0  end
nd-143   16  0.0  4.12493E-05  293.0  end
nd-145   16  0.0  3.32364E-05  293.0  end
sm-147   16  0.0  2.99597E-06  293.0  end
sm-149   16  0.0  1.62307E-07  293.0  end
sm-150   16  0.0  1.48009E-05  293.0  end
sm-151   16  0.0  9.26712E-07  293.0  end
sm-152   16  0.0  5.30372E-06  293.0  end
eu-153   16  0.0  6.22674E-06  293.0  end
gd-155   16  0.0  4.33744E-09  293.0  end
u-234    16  0.0  3.65669E-06  293.0  end
u-235    16  0.0  2.39857E-04  293.0  end
u-236    16  0.0  1.19951E-04  293.0  end
u-238    16  0.0  2.11489E-02  293.0  end
np-237   16  0.0  1.70778E-05  293.0  end
pu-238   16  0.0  7.61244E-06  293.0  end
pu-239   16  0.0  2.05961E-04  293.0  end
pu-240   16  0.0  6.40563E-05  293.0  end
pu-241   16  0.0  4.88499E-05  293.0  end
pu-242   16  0.0  1.56865E-05  293.0  end
am-241   16  0.0  1.60170E-06  293.0  end
am-243   16  0.0  3.70170E-06  293.0  end
o        16  0.0  4.58960E-02  293.0  end
mo-95    17  0.0  4.53387E-05  293.0  end
tc-99    17  0.0  5.10893E-05  293.0  end
ru-101   17  0.0  5.09628E-05  293.0  end
rh-103   17  0.0  2.72065E-05  293.0  end
ag-109   17  0.0  4.38946E-06  293.0  end
cs-133   17  0.0  5.20060E-05  293.0  end
nd-143   17  0.0  3.81946E-05  293.0  end
nd-145   17  0.0  3.02590E-05  293.0  end
sm-147   17  0.0  2.69260E-06  293.0  end
sm-149   17  0.0  1.61536E-07  293.0  end
sm-150   17  0.0  1.31508E-05  293.0  end
sm-151   17  0.0  8.62618E-07  293.0  end
sm-152   17  0.0  4.84635E-06  293.0  end
eu-153   17  0.0  5.37101E-06  293.0  end
gd-155   17  0.0  3.39934E-09  293.0  end
u-234    17  0.0  4.02008E-06  293.0  end
u-235    17  0.0  2.82758E-04  293.0  end
u-236    17  0.0  1.15231E-04  293.0  end
u-238    17  0.0  2.12574E-02  293.0  end
np-237   17  0.0  1.48982E-05  293.0  end
pu-238   17  0.0  5.78822E-06  293.0  end
pu-239   17  0.0  2.00871E-04  293.0  end
pu-240   17  0.0  5.82008E-05  293.0  end
pu-241   17  0.0  4.38693E-05  293.0  end
pu-242   17  0.0  1.22803E-05  293.0  end
am-241   17  0.0  1.34344E-06  293.0  end
am-243   17  0.0  2.68159E-06  293.0  end
o        17  0.0  4.58960E-02  293.0  end
mo-95    18  0.0  3.42666E-05  293.0  end
tc-99    18  0.0  4.04857E-05  293.0  end
ru-101   18  0.0  3.91026E-05  293.0  end
rh-103   18  0.0  2.13892E-05  293.0  end
ag-109   18  0.0  3.02721E-06  293.0  end
cs-133   18  0.0  4.16939E-05  293.0  end
nd-143   18  0.0  3.15008E-05  293.0  end
nd-145   18  0.0  2.42500E-05  293.0  end
sm-147   18  0.0  2.00967E-06  293.0  end
sm-149   18  0.0  1.57841E-07  293.0  end
sm-150   18  0.0  9.92606E-06  293.0  end
sm-151   18  0.0  7.34702E-07  293.0  end
sm-152   18  0.0  3.90359E-06  293.0  end
eu-153   18  0.0  3.75341E-06  293.0  end
gd-155   18  0.0  1.96535E-09  293.0  end
u-234    18  0.0  4.78195E-06  293.0  end
u-235    18  0.0  3.80319E-04  293.0  end
u-236    18  0.0  1.02041E-04  293.0  end
u-238    18  0.0  2.14533E-02  293.0  end
np-237   18  0.0  1.06080E-05  293.0  end
pu-238   18  0.0  3.02951E-06  293.0  end
pu-239   18  0.0  1.86207E-04  293.0  end
pu-240   18  0.0  4.54577E-05  293.0  end
pu-241   18  0.0  3.28165E-05  293.0  end
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pu-242   18  0.0  1.61382E-06  293.0  end
am-241   18  0.0  2.28391E-07  293.0  end
am-243   18  0.0  1.58691E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  3.60489E-06  293.0  end
tc-99    19  0.0  9.62205E-06  293.0  end
ru-101   19  0.0  8.62330E-06  293.0  end
rh-103   19  0.0  3.72052E-06  293.0  end
ag-109   19  0.0  2.80964E-07  293.0  end
cs-133   19  0.0  1.00124E-05  293.0  end
nd-143   19  0.0  7.82217E-06  293.0  end
nd-145   19  0.0  6.11608E-06  293.0  end
sm-147   19  0.0  1.66025E-07  293.0  end
sm-149   19  0.0  1.12591E-07  293.0  end
sm-150   19  0.0  1.77893E-06  293.0  end
sm-151   19  0.0  3.39708E-07  293.0  end
sm-152   19  0.0  8.48281E-07  293.0  end
eu-153   19  0.0  4.06906E-07  293.0  end
gd-155   19  0.0  2.38783E-10  293.0  end
u-234    19  0.0  7.18904E-06  293.0  end
u-235    19  0.0  7.63846E-04  293.0  end
u-236    19  0.0  3.50434E-05  293.0  end
u-238    19  0.0  2.18987E-02  293.0  end
np-237   19  0.0  1.12639E-06  293.0  end
pu-238   19  0.0  6.67749E-08  293.0  end
pu-239   19  0.0  7.78525E-05  293.0  end
pu-240   19  0.0  6.56349E-06  293.0  end
pu-241   19  0.0  2.16806E-06  293.0  end
pu-242   19  0.0  8.57529E-08  293.0  end
am-241   19  0.0  1.30160E-08  293.0  end
am-243   19  0.0  2.92719E-09  293.0  end
o        19  0.0  4.58960E-02  293.0  end
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EOF ed24_f01_id09405_b30.mip

```
pu-242   18  0.0  6.77733E-06  293.0  end
am-241   18  0.0  8.35494E-07  293.0  end
am-243   18  0.0  1.18983E-06  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  1.07992E-05  293.0  end
tc-99    19  0.0  1.76762E-05  293.0  end
ru-101   19  0.0  1.60668E-05  293.0  end
rh-103   19  0.0  8.25125E-06  293.0  end
ag-109   19  0.0  7.75062E-07  293.0  end
cs-133   19  0.0  1.84718E-05  293.0  end
nd-143   19  0.0  1.46035E-05  293.0  end
nd-145   19  0.0  1.09672E-05  293.0  end
sm-147   19  0.0  5.27112E-07  293.0  end
sm-149   19  0.0  1.31370E-07  293.0  end
sm-150   19  0.0  3.63945E-06  293.0  end
sm-151   19  0.0  4.57408E-07  293.0  end
sm-152   19  0.0  1.69108E-06  293.0  end
eu-153   19  0.0  1.00906E-06  293.0  end
gd-155   19  0.0  4.44172E-10  293.0  end
u-234    19  0.0  6.53976E-06  293.0  end
u-235    19  0.0  6.47341E-04  293.0  end
u-236    19  0.0  5.69246E-05  293.0  end
u-238    19  0.0  2.17965E-02  293.0  end
np-237   19  0.0  2.86069E-06  293.0  end
pu-238   19  0.0  3.20752E-07  293.0  end
pu-239   19  0.0  1.20509E-04  293.0  end
pu-240   19  0.0  1.59776E-05  293.0  end
pu-241   19  0.0  8.15522E-06  293.0  end
pu-242   19  0.0  6.30115E-07  293.0  end
am-241   19  0.0  9.26971E-08  293.0  end
am-243   19  0.0  4.31533E-08  293.0  end
o        19  0.0  4.58960E-02  293.0  end
ííííííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id09405_b50.mip

File ed24_f01_id36576_b30.mip

```
lfd.Nr.:   1 aus sha_alf.mod


mo-95     1  0.0  4.62538E-06  293.0  end
tc-99     1  0.0  1.09290E-05  293.0  end
ru-101    1  0.0  9.80798E-06  293.0  end
rh-103    1  0.0  4.43042E-06  293.0  end
ag-109    1  0.0  3.47402E-07  293.0  end
cs-133    1  0.0  1.13926E-05  293.0  end
nd-143    1  0.0  8.95422E-06  293.0  end
nd-145    1  0.0  6.91093E-06  293.0  end
sm-147    1  0.0  2.13338E-07  293.0  end
sm-149    1  0.0  1.16110E-07  293.0  end
sm-150    1  0.0  2.06338E-06  293.0  end
sm-151    1  0.0  3.62044E-07  293.0  end
sm-152    1  0.0  9.84586E-07  293.0  end
eu-153    1  0.0  4.88371E-07  293.0  end
gd-155    1  0.0  2.66713E-10  293.0  end
u-234     1  0.0  7.08276E-06  293.0  end
u-235     1  0.0  7.43967E-04  293.0  end
u-236     1  0.0  3.88309E-05  293.0  end
u-238     1  0.0  2.18831E-02  293.0  end
np-237    1  0.0  1.36834E-06  293.0  end
pu-238    1  0.0  9.25215E-08  293.0  end
pu-239    1  0.0  8.58435E-05  293.0  end
pu-240    1  0.0  7.97413E-06  293.0  end
pu-241    1  0.0  2.91224E-06  293.0  end
pu-242    1  0.0  1.32210E-07  293.0  end
am-241    1  0.0  2.00003E-08  293.0  end
am-243    1  0.0  5.21205E-09  293.0  end
o         1  0.0  4.58960E-02  293.0  end
mo-95     2  0.0  2.08378E-05  293.0  end
tc-99     2  0.0  2.75453E-05  293.0  end
ru-101    2  0.0  2.56613E-05  293.0  end
rh-103    2  0.0  1.39789E-05  293.0  end
```

File ed24_f01_id36576_b50.mip

```
lfd.Nr.:   2 aus sha_alf.mod


mo-95     1  0.0  1.24659E-05  293.0  end
tc-99     1  0.0  1.93555E-05  293.0  end
ru-101    1  0.0  1.76624E-05  293.0  end
rh-103    1  0.0  9.22172E-06  293.0  end
ag-109    1  0.0  9.01388E-07  293.0  end
cs-133    1  0.0  2.02203E-05  293.0  end
nd-143    1  0.0  1.59612E-05  293.0  end
nd-145    1  0.0  1.19654E-05  293.0  end
sm-147    1  0.0  6.19957E-07  293.0  end
sm-149    1  0.0  1.34554E-07  293.0  end
sm-150    1  0.0  4.05680E-06  293.0  end
sm-151    1  0.0  4.78673E-07  293.0  end
sm-152    1  0.0  1.86426E-06  293.0  end
eu-153    1  0.0  1.16312E-06  293.0  end
gd-155    1  0.0  5.01287E-10  293.0  end
u-234     1  0.0  6.40603E-06  293.0  end
u-235     1  0.0  6.24710E-04  293.0  end
u-236     1  0.0  6.10686E-05  293.0  end
u-238     1  0.0  2.17742E-02  293.0  end
np-237    1  0.0  3.30510E-06  293.0  end
pu-238    1  0.0  4.07077E-07  293.0  end
pu-239    1  0.0  1.27717E-04  293.0  end
pu-240    1  0.0  1.80930E-05  293.0  end
pu-241    1  0.0  9.73504E-06  293.0  end
pu-242    1  0.0  8.34000E-07  293.0  end
am-241    1  0.0  1.21591E-07  293.0  end
am-243    1  0.0  6.34813E-08  293.0  end
o         1  0.0  4.58960E-02  293.0  end
mo-95     2  0.0  3.88384E-05  293.0  end
tc-99     2  0.0  4.48748E-05  293.0  end
ru-101    2  0.0  4.39109E-05  293.0  end
rh-103    2  0.0  2.38327E-05  293.0  end
```

```
ag-109    2  0.0  1.61638E-06  293.0  end
cs-133    2  0.0  2.86687E-05  293.0  end
nd-143    2  0.0  2.23235E-05  293.0  end
nd-145    2  0.0  1.67839E-05  293.0  end
sm-147    2  0.0  1.12841E-06  293.0  end
sm-149    2  0.0  1.46909E-07  293.0  end
sm-150    2  0.0  6.21190E-06  293.0  end
sm-151    2  0.0  5.78735E-07  293.0  end
sm-152    2  0.0  2.68510E-06  293.0  end
eu-153    2  0.0  2.03751E-06  293.0  end
gd-155    2  0.0  8.86159E-10  293.0  end
u-234     2  0.0  5.76261E-06  293.0  end
u-235     2  0.0  5.21537E-04  293.0  end
u-236     2  0.0  7.93383E-05  293.0  end
u-238     2  0.0  2.16588E-02  293.0  end
np-237    2  0.0  5.81487E-06  293.0  end
pu-238    2  0.0  1.04778E-06  293.0  end
pu-239    2  0.0  1.56525E-04  293.0  end
pu-240    2  0.0  2.87201E-05  293.0  end
pu-241    2  0.0  1.83290E-05  293.0  end
pu-242    2  0.0  2.36835E-06  293.0  end
am-241    2  0.0  3.27051E-07  293.0  end
am-243    2  0.0  2.71423E-07  293.0  end
o         2  0.0  4.58960E-02  293.0  end
mo-95     3  0.0  2.84146E-05  293.0  end
tc-99     3  0.0  3.48558E-05  293.0  end
ru-101    3  0.0  3.31267E-05  293.0  end
rh-103    3  0.0  1.81959E-05  293.0  end
ag-109    3  0.0  2.37566E-06  293.0  end
cs-133    3  0.0  3.60802E-05  293.0  end
nd-143    3  0.0  2.76408E-05  293.0  end
nd-145    3  0.0  2.10214E-05  293.0  end
sm-147    3  0.0  1.62441E-06  293.0  end
sm-149    3  0.0  1.54151E-07  293.0  end
sm-150    3  0.0  8.27223E-06  293.0  end
sm-151    3  0.0  6.66834E-07  293.0  end
sm-152    3  0.0  3.38396E-06  293.0  end
eu-153    3  0.0  2.96445E-06  293.0  end
gd-155    3  0.0  1.41466E-09  293.0  end
u-234     3  0.0  5.20264E-06  293.0  end
u-235     3  0.0  4.38678E-04  293.0  end
u-236     3  0.0  9.30581E-05  293.0  end
u-238     3  0.0  2.15463E-02  293.0  end
np-237    3  0.0  8.43547E-06  293.0  end
pu-238    3  0.0  1.99939E-06  293.0  end
pu-239    3  0.0  1.75219E-04  293.0  end
pu-240    3  0.0  3.82703E-05  293.0  end
pu-241    3  0.0  2.65413E-05  293.0  end
pu-242    3  0.0  4.55218E-06  293.0  end
am-241    3  0.0  5.91957E-07  293.0  end
am-243    3  0.0  6.80295E-07  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  3.57426E-05  293.0  end
tc-99     4  0.0  4.19048E-05  293.0  end
ru-101    4  0.0  4.06419E-05  293.0  end
rh-103    4  0.0  2.21844E-05  293.0  end
ag-109    4  0.0  3.19969E-06  293.0  end
cs-133    4  0.0  4.30941E-05  293.0  end
nd-143    4  0.0  3.24404E-05  293.0  end
nd-145    4  0.0  2.50588E-05  293.0  end
sm-147    4  0.0  2.10524E-06  293.0  end
sm-149    4  0.0  1.58557E-07  293.0  end
sm-150    4  0.0  1.03501E-05  293.0  end
sm-151    4  0.0  7.51812E-07  293.0  end
sm-152    4  0.0  4.03217E-06  293.0  end
eu-153    4  0.0  3.96082E-06  293.0  end
gd-155    4  0.0  2.12592E-09  293.0  end
u-234     4  0.0  4.67762E-06  293.0  end
u-235     4  0.0  3.66342E-04  293.0  end
u-236     4  0.0  1.04093E-04  293.0  end
u-238     4  0.0  2.14287E-02  293.0  end
np-237    4  0.0  1.11701E-05  293.0  end
pu-238    4  0.0  3.33417E-06  293.0  end
pu-239    4  0.0  1.88582E-04  293.0  end
pu-240    4  0.0  4.72298E-05  293.0  end
pu-241    4  0.0  3.43640E-05  293.0  end
pu-242    4  0.0  7.41330E-06  293.0  end
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ag-109    2  0.0  3.57094E-06  293.0  end
cs-133    2  0.0  4.60060E-05  293.0  end
nd-143    2  0.0  3.43652E-05  293.0  end
nd-145    2  0.0  2.67473E-05  293.0  end
sm-147    2  0.0  2.30201E-06  293.0  end
sm-149    2  0.0  1.59807E-07  293.0  end
sm-150    2  0.0  1.12460E-05  293.0  end
sm-151    2  0.0  7.87632E-07  293.0  end
sm-152    2  0.0  4.29887E-06  293.0  end
eu-153    2  0.0  4.40492E-06  293.0  end
gd-155    2  0.0  2.49225E-09  293.0  end
u-234     2  0.0  4.46139E-06  293.0  end
u-235     2  0.0  3.38015E-04  293.0  end
u-236     2  0.0  1.08097E-04  293.0  end
u-238     2  0.0  2.13757E-02  293.0  end
np-237    2  0.0  1.23621E-05  293.0  end
pu-238    2  0.0  4.03458E-06  293.0  end
pu-239    2  0.0  1.93114E-04  293.0  end
pu-240    2  0.0  5.08799E-05  293.0  end
pu-241    2  0.0  3.75446E-05  293.0  end
pu-242    2  0.0  8.84473E-06  293.0  end
am-241    2  0.0  1.04102E-06  293.0  end
am-243    2  0.0  1.72062E-06  293.0  end
o         2  0.0  4.58960E-02  293.0  end
mo-95     3  0.0  4.93516E-05  293.0  end
tc-99     3  0.0  5.49039E-05  293.0  end
ru-101    3  0.0  5.54463E-05  293.0  end
rh-103    3  0.0  2.92184E-05  293.0  end
ag-109    3  0.0  4.91781E-06  293.0  end
cs-133    3  0.0  5.56207E-05  293.0  end
nd-143    3  0.0  4.04110E-05  293.0  end
nd-145    3  0.0  3.24006E-05  293.0  end
sm-147    3  0.0  2.91388E-06  293.0  end
sm-149    3  0.0  1.62138E-07  293.0  end
sm-150    3  0.0  1.43348E-05  293.0  end
sm-151    3  0.0  9.08667E-07  293.0  end
sm-152    3  0.0  5.17588E-06  293.0  end
eu-153    3  0.0  5.98365E-06  293.0  end
gd-155    3  0.0  4.05739E-09  293.0  end
u-234     3  0.0  3.75759E-06  293.0  end
u-235     3  0.0  2.51529E-04  293.0  end
u-236     3  0.0  1.18749E-04  293.0  end
u-238     3  0.0  2.11800E-02  293.0  end
np-237    3  0.0  1.64652E-05  293.0  end
pu-238    3  0.0  7.06786E-06  293.0  end
pu-239    3  0.0  2.04652E-04  293.0  end
pu-240    3  0.0  6.24496E-05  293.0  end
pu-241    3  0.0  4.74907E-05  293.0  end
pu-242    3  0.0  1.46849E-05  293.0  end
am-241    3  0.0  1.52960E-06  293.0  end
am-243    3  0.0  3.39536E-06  293.0  end
o         3  0.0  4.58960E-02  293.0  end
mo-95     4  0.0  5.80963E-05  293.0  end
tc-99     4  0.0  6.31362E-05  293.0  end
ru-101    4  0.0  6.55749E-05  293.0  end
rh-103    4  0.0  3.33837E-05  293.0  end
ag-109    4  0.0  6.11996E-06  293.0  end
cs-133    4  0.0  6.32287E-05  293.0  end
nd-143    4  0.0  4.48287E-05  293.0  end
nd-145    4  0.0  3.69932E-05  293.0  end
sm-147    4  0.0  3.33072E-06  293.0  end
sm-149    4  0.0  1.62788E-07  293.0  end
sm-150    4  0.0  1.69121E-05  293.0  end
sm-151    4  0.0  1.00837E-06  293.0  end
sm-152    4  0.0  5.87214E-06  293.0  end
eu-153    4  0.0  7.34022E-06  293.0  end
gd-155    4  0.0  5.77208E-09  293.0  end
u-234     4  0.0  3.21654E-06  293.0  end
u-235     4  0.0  1.91041E-04  293.0  end
u-236     4  0.0  1.24067E-04  293.0  end
u-238     4  0.0  2.09975E-02  293.0  end
np-237    4  0.0  1.97050E-05  293.0  end
pu-238    4  0.0  1.03690E-05  293.0  end
pu-239    4  0.0  2.10809E-04  293.0  end
pu-240    4  0.0  7.08341E-05  293.0  end
pu-241    4  0.0  5.45879E-05  293.0  end
pu-242    4  0.0  2.05986E-05  293.0  end
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am-241    4  0.0  9.00758E-07  293.0  end
am-243    4  0.0  1.34834E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  3.78227E-05  293.0  end
tc-99     5  0.0  4.39008E-05  293.0  end
ru-101    5  0.0  4.28322E-05  293.0  end
rh-103    5  0.0  2.32949E-05  293.0  end
ag-109    5  0.0  3.44775E-06  293.0  end
cs-133    5  0.0  4.50543E-05  293.0  end
nd-143    5  0.0  3.37409E-05  293.0  end
nd-145    5  0.0  2.61946E-05  293.0  end
sm-147    5  0.0  2.23808E-06  293.0  end
sm-149    5  0.0  1.59432E-07  293.0  end
sm-150    5  0.0  1.09513E-05  293.0  end
sm-151    5  0.0  7.75888E-07  293.0  end
sm-152    5  0.0  4.21187E-06  293.0  end
eu-153    5  0.0  4.25791E-06  293.0  end
gd-155    5  0.0  2.36756E-09  293.0  end
u-234     5  0.0  4.53191E-06  293.0  end
u-235     5  0.0  3.47163E-04  293.0  end
u-236     5  0.0  1.06824E-04  293.0  end
u-238     5  0.0  2.13935E-02  293.0  end
np-237    5  0.0  1.19694E-05  293.0  end
pu-238    5  0.0  3.79549E-06  293.0  end
pu-239    5  0.0  1.91696E-04  293.0  end
pu-240    5  0.0  4.96930E-05  293.0  end
pu-241    5  0.0  3.65119E-05  293.0  end
pu-242    5  0.0  8.36051E-06  293.0  end
am-241    5  0.0  9.94572E-07  293.0  end
am-243    5  0.0  1.59248E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  3.89300E-05  293.0  end
tc-99     6  0.0  4.49627E-05  293.0  end
ru-101    6  0.0  4.40085E-05  293.0  end
rh-103    6  0.0  2.38811E-05  293.0  end
ag-109    6  0.0  3.58213E-06  293.0  end
cs-133    6  0.0  4.60918E-05  293.0  end
nd-143    6  0.0  3.44212E-05  293.0  end
nd-145    6  0.0  2.67971E-05  293.0  end
sm-147    6  0.0  2.30775E-06  293.0  end
sm-149    6  0.0  1.59840E-07  293.0  end
sm-150    6  0.0  1.12727E-05  293.0  end
sm-151    6  0.0  7.88692E-07  293.0  end
sm-152    6  0.0  4.30671E-06  293.0  end
eu-153    6  0.0  4.41826E-06  293.0  end
gd-155    6  0.0  2.50372E-09  293.0  end
u-234     6  0.0  4.45505E-06  293.0  end
u-235     6  0.0  3.37196E-04  293.0  end
u-236     6  0.0  1.08210E-04  293.0  end
u-238     6  0.0  2.13740E-02  293.0  end
np-237    6  0.0  1.23976E-05  293.0  end
pu-238    6  0.0  4.05661E-06  293.0  end
pu-239    6  0.0  1.93239E-04  293.0  end
pu-240    6  0.0  5.09864E-05  293.0  end
pu-241    6  0.0  3.76372E-05  293.0  end
pu-242    6  0.0  8.88913E-06  293.0  end
am-241    6  0.0  1.04523E-06  293.0  end
am-243    6  0.0  1.73248E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  3.92948E-05  293.0  end
tc-99     7  0.0  4.53123E-05  293.0  end
ru-101    7  0.0  4.43976E-05  293.0  end
rh-103    7  0.0  2.40733E-05  293.0  end
ag-109    7  0.0  3.62674E-06  293.0  end
cs-133    7  0.0  4.64327E-05  293.0  end
nd-143    7  0.0  3.46434E-05  293.0  end
nd-145    7  0.0  2.69951E-05  293.0  end
sm-147    7  0.0  2.33053E-06  293.0  end
sm-149    7  0.0  1.59965E-07  293.0  end
sm-150    7  0.0  1.13789E-05  293.0  end
sm-151    7  0.0  7.92908E-07  293.0  end
sm-152    7  0.0  4.33785E-06  293.0  end
eu-153    7  0.0  4.47140E-06  293.0  end
gd-155    7  0.0  2.54972E-09  293.0  end
u-234     7  0.0  4.42986E-06  293.0  end
u-235     7  0.0  3.33950E-04  293.0  end
u-236     7  0.0  1.08657E-04  293.0  end
```

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am-241    4  0.0  1.91556E-06  293.0  end
am-243    4  0.0  5.28624E-06  293.0  end
o         4  0.0  4.58960E-02  293.0  end
mo-95     5  0.0  6.07330E-05  293.0  end
tc-99     5  0.0  6.55924E-05  293.0  end
ru-101    5  0.0  6.87282E-05  293.0  end
rh-103    5  0.0  3.45758E-05  293.0  end
ag-109    5  0.0  6.49399E-06  293.0  end
cs-133    5  0.0  6.54420E-05  293.0  end
nd-143    5  0.0  4.60486E-05  293.0  end
nd-145    5  0.0  3.83572E-05  293.0  end
sm-147    5  0.0  3.43696E-06  293.0  end
sm-149    5  0.0  1.62856E-07  293.0  end
sm-150    5  0.0  1.76835E-05  293.0  end
sm-151    5  0.0  1.03831E-06  293.0  end
sm-152    5  0.0  6.07606E-06  293.0  end
eu-153    5  0.0  7.75013E-06  293.0  end
gd-155    5  0.0  6.36653E-09  293.0  end
u-234     5  0.0  3.06291E-06  293.0  end
u-235     5  0.0  1.74816E-04  293.0  end
u-236     5  0.0  1.25040E-04  293.0  end
u-238     5  0.0  2.09383E-02  293.0  end
np-237    5  0.0  2.06801E-05  293.0  end
pu-238    5  0.0  1.14908E-05  293.0  end
pu-239    5  0.0  2.12237E-04  293.0  end
pu-240    5  0.0  7.31416E-05  293.0  end
pu-241    5  0.0  5.64756E-05  293.0  end
pu-242    5  0.0  2.25409E-05  293.0  end
am-241    5  0.0  2.02347E-06  293.0  end
am-243    5  0.0  5.94507E-06  293.0  end
o         5  0.0  4.58960E-02  293.0  end
mo-95     6  0.0  6.20158E-05  293.0  end
tc-99     6  0.0  6.67816E-05  293.0  end
ru-101    6  0.0  7.02789E-05  293.0  end
rh-103    6  0.0  3.51439E-05  293.0  end
ag-109    6  0.0  6.67764E-06  293.0  end
cs-133    6  0.0  6.65039E-05  293.0  end
nd-143    6  0.0  4.66225E-05  293.0  end
nd-145    6  0.0  3.90164E-05  293.0  end
sm-147    6  0.0  3.48523E-06  293.0  end
sm-149    6  0.0  1.62890E-07  293.0  end
sm-150    6  0.0  1.80572E-05  293.0  end
sm-151    6  0.0  1.05285E-06  293.0  end
sm-152    6  0.0  6.17419E-06  293.0  end
eu-153    6  0.0  7.94908E-06  293.0  end
gd-155    6  0.0  6.66935E-09  293.0  end
u-234     6  0.0  2.98998E-06  293.0  end
u-235     6  0.0  1.67259E-04  293.0  end
u-236     6  0.0  1.25407E-04  293.0  end
u-238     6  0.0  2.09090E-02  293.0  end
np-237    6  0.0  2.11361E-05  293.0  end
pu-238    6  0.0  1.20569E-05  293.0  end
pu-239    6  0.0  2.12871E-04  293.0  end
pu-240    6  0.0  7.42194E-05  293.0  end
pu-241    6  0.0  5.73552E-05  293.0  end
pu-242    6  0.0  2.35087E-05  293.0  end
am-241    6  0.0  2.07419E-06  293.0  end
am-243    6  0.0  6.28066E-06  293.0  end
o         6  0.0  4.58960E-02  293.0  end
mo-95     7  0.0  6.25469E-05  293.0  end
tc-99     7  0.0  6.72726E-05  293.0  end
ru-101    7  0.0  7.09241E-05  293.0  end
rh-103    7  0.0  3.53765E-05  293.0  end
ag-109    7  0.0  6.75398E-06  293.0  end
cs-133    7  0.0  6.69404E-05  293.0  end
nd-143    7  0.0  4.68567E-05  293.0  end
nd-145    7  0.0  3.92883E-05  293.0  end
sm-147    7  0.0  3.50453E-06  293.0  end
sm-149    7  0.0  1.62904E-07  293.0  end
sm-150    7  0.0  1.82114E-05  293.0  end
sm-151    7  0.0  1.05887E-06  293.0  end
sm-152    7  0.0  6.21463E-06  293.0  end
eu-153    7  0.0  8.03134E-06  293.0  end
gd-155    7  0.0  6.79731E-09  293.0  end
u-234     7  0.0  2.96010E-06  293.0  end
u-235     7  0.0  1.64192E-04  293.0  end
u-236     7  0.0  1.25542E-04  293.0  end
```

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u-238      7  0.0  2.13674E-02  293.0  end
np-237     7  0.0  1.25389E-05  293.0  end
pu-238     7  0.0  4.14504E-06  293.0  end
pu-239     7  0.0  1.93731E-04  293.0  end
pu-240     7  0.0  5.14096E-05  293.0  end
pu-241     7  0.0  3.80050E-05  293.0  end
pu-242     7  0.0  9.06697E-06  293.0  end
am-241     7  0.0  1.06201E-06  293.0  end
am-243     7  0.0  1.78016E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  3.85965E-05  293.0  end
tc-99      8  0.0  4.46429E-05  293.0  end
ru-101     8  0.0  4.36534E-05  293.0  end
rh-103     8  0.0  2.37049E-05  293.0  end
ag-109     8  0.0  3.54148E-06  293.0  end
cs-133     8  0.0  4.57796E-05  293.0  end
nd-143     8  0.0  3.42171E-05  293.0  end
nd-145     8  0.0  2.66158E-05  293.0  end
sm-147     8  0.0  2.28683E-06  293.0  end
sm-149     8  0.0  1.59721E-07  293.0  end
sm-150     8  0.0  1.11756E-05  293.0  end
sm-151     8  0.0  7.84835E-07  293.0  end
sm-152     8  0.0  4.27818E-06  293.0  end
eu-153     8  0.0  4.36979E-06  293.0  end
gd-155     8  0.0  2.46215E-09  293.0  end
u-234      8  0.0  4.47814E-06  293.0  end
u-235      8  0.0  3.40180E-04  293.0  end
u-236      8  0.0  1.07797E-04  293.0  end
u-238      8  0.0  2.13800E-02  293.0  end
np-237     8  0.0  1.22685E-05  293.0  end
pu-238     8  0.0  3.97679E-06  293.0  end
pu-239     8  0.0  1.92782E-04  293.0  end
pu-240     8  0.0  5.05982E-05  293.0  end
pu-241     8  0.0  3.72997E-05  293.0  end
pu-242     8  0.0  8.72811E-06  293.0  end
am-241     8  0.0  1.02992E-06  293.0  end
am-243     8  0.0  1.68956E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  3.75693E-05  293.0  end
tc-99      9  0.0  4.36578E-05  293.0  end
ru-101     9  0.0  4.25641E-05  293.0  end
rh-103     9  0.0  2.31602E-05  293.0  end
ag-109     9  0.0  3.41723E-06  293.0  end
cs-133     9  0.0  4.48164E-05  293.0  end
nd-143     9  0.0  3.35841E-05  293.0  end
nd-145     9  0.0  2.60565E-05  293.0  end
sm-147     9  0.0  2.22205E-06  293.0  end
sm-149     9  0.0  1.59333E-07  293.0  end
sm-150     9  0.0  1.08780E-05  293.0  end
sm-151     9  0.0  7.72957E-07  293.0  end
sm-152     9  0.0  4.19011E-06  293.0  end
eu-153     9  0.0  4.22145E-06  293.0  end
gd-155     9  0.0  2.33713E-09  293.0  end
u-234      9  0.0  4.54958E-06  293.0  end
u-235      9  0.0  3.49468E-04  293.0  end
u-236      9  0.0  1.06501E-04  293.0  end
u-238      9  0.0  2.13978E-02  293.0  end
np-237     9  0.0  1.18715E-05  293.0  end
pu-238     9  0.0  3.73729E-06  293.0  end
pu-239     9  0.0  1.91332E-04  293.0  end
pu-240     9  0.0  4.93953E-05  293.0  end
pu-241     9  0.0  3.62525E-05  293.0  end
pu-242     9  0.0  8.24195E-06  293.0  end
am-241     9  0.0  9.83048E-07  293.0  end
am-243     9  0.0  1.56145E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  3.68025E-05  293.0  end
tc-99     10  0.0  4.29222E-05  293.0  end
ru-101    10  0.0  4.17551E-05  293.0  end
rh-103    10  0.0  2.27517E-05  293.0  end
ag-109    10  0.0  3.32539E-06  293.0  end
cs-133    10  0.0  4.40952E-05  293.0  end
nd-143    10  0.0  3.31068E-05  293.0  end
nd-145    10  0.0  2.56382E-05  293.0  end
sm-147    10  0.0  2.17328E-06  293.0  end
sm-149    10  0.0  1.59022E-07  293.0  end
sm-150    10  0.0  1.06563E-05  293.0  end
```

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u-238      7  0.0  2.08968E-02  293.0  end
np-237     7  0.0  2.13237E-05  293.0  end
pu-238     7  0.0  1.22953E-05  293.0  end
pu-239     7  0.0  2.13126E-04  293.0  end
pu-240     7  0.0  7.46583E-05  293.0  end
pu-241     7  0.0  5.77108E-05  293.0  end
pu-242     7  0.0  2.39134E-05  293.0  end
am-241     7  0.0  2.09482E-06  293.0  end
am-243     7  0.0  6.42235E-06  293.0  end
o          7  0.0  4.58960E-02  293.0  end
mo-95      8  0.0  6.19018E-05  293.0  end
tc-99      8  0.0  6.66761E-05  293.0  end
ru-101     8  0.0  7.01407E-05  293.0  end
rh-103     8  0.0  3.50938E-05  293.0  end
ag-109     8  0.0  6.66128E-06  293.0  end
cs-133     8  0.0  6.64101E-05  293.0  end
nd-143     8  0.0  4.65720E-05  293.0  end
nd-145     8  0.0  3.89580E-05  293.0  end
sm-147     8  0.0  3.48103E-06  293.0  end
sm-149     8  0.0  1.62887E-07  293.0  end
sm-150     8  0.0  1.80241E-05  293.0  end
sm-151     8  0.0  1.05156E-06  293.0  end
sm-152     8  0.0  6.16549E-06  293.0  end
eu-153     8  0.0  7.93142E-06  293.0  end
gd-155     8  0.0  6.64209E-09  293.0  end
u-234      8  0.0  2.99641E-06  293.0  end
u-235      8  0.0  1.67921E-04  293.0  end
u-236      8  0.0  1.25377E-04  293.0  end
u-238      8  0.0  2.09116E-02  293.0  end
np-237     8  0.0  2.10957E-05  293.0  end
pu-238     8  0.0  1.20060E-05  293.0  end
pu-239     8  0.0  2.12816E-04  293.0  end
pu-240     8  0.0  7.41246E-05  293.0  end
pu-241     8  0.0  5.72782E-05  293.0  end
pu-242     8  0.0  2.34222E-05  293.0  end
am-241     8  0.0  2.06974E-06  293.0  end
am-243     8  0.0  6.25046E-06  293.0  end
o          8  0.0  4.58960E-02  293.0  end
mo-95      9  0.0  6.08768E-05  293.0  end
tc-99      9  0.0  6.57259E-05  293.0  end
ru-101     9  0.0  6.89015E-05  293.0  end
rh-103     9  0.0  3.46399E-05  293.0  end
ag-109     9  0.0  6.51452E-06  293.0  end
cs-133     9  0.0  6.55615E-05  293.0  end
nd-143     9  0.0  4.61135E-05  293.0  end
nd-145     9  0.0  3.84312E-05  293.0  end
sm-147     9  0.0  3.44248E-06  293.0  end
sm-149     9  0.0  1.62860E-07  293.0  end
sm-150     9  0.0  1.77255E-05  293.0  end
sm-151     9  0.0  1.03994E-06  293.0  end
sm-152     9  0.0  6.08709E-06  293.0  end
eu-153     9  0.0  7.77245E-06  293.0  end
gd-155     9  0.0  6.40003E-09  293.0  end
u-234      9  0.0  3.05468E-06  293.0  end
u-235      9  0.0  1.73958E-04  293.0  end
u-236      9  0.0  1.25084E-04  293.0  end
u-238      9  0.0  2.09351E-02  293.0  end
np-237     9  0.0  2.07316E-05  293.0  end
pu-238     9  0.0  1.15535E-05  293.0  end
pu-239     9  0.0  2.12310E-04  293.0  end
pu-240     9  0.0  7.32637E-05  293.0  end
pu-241     9  0.0  5.65756E-05  293.0  end
pu-242     9  0.0  2.26487E-05  293.0  end
am-241     9  0.0  2.02921E-06  293.0  end
am-243     9  0.0  5.98220E-06  293.0  end
o          9  0.0  4.58960E-02  293.0  end
mo-95     10  0.0  6.01094E-05  293.0  end
tc-99     10  0.0  6.50128E-05  293.0  end
ru-101    10  0.0  6.79781E-05  293.0  end
rh-103    10  0.0  3.42965E-05  293.0  end
ag-109    10  0.0  6.40509E-06  293.0  end
cs-133    10  0.0  6.49220E-05  293.0  end
nd-143    10  0.0  4.57651E-05  293.0  end
nd-145    10  0.0  3.80357E-05  293.0  end
sm-147    10  0.0  3.41267E-06  293.0  end
sm-149    10  0.0  1.62840E-07  293.0  end
sm-150    10  0.0  1.75014E-05  293.0  end
```

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sm-151    10  0.0  7.64087E-07  293.0  end
sm-152    10  0.0  4.12404E-06  293.0  end
eu-153    10  0.0  4.11156E-06  293.0  end
gd-155    10  0.0  2.24675E-09  293.0  end
u-234     10  0.0  4.60318E-06  293.0  end
u-235     10  0.0  3.56495E-04  293.0  end
u-236     10  0.0  1.05507E-04  293.0  end
u-238     10  0.0  2.14108E-02  293.0  end
np-237    10  0.0  1.15763E-05  293.0  end
pu-238    10  0.0  3.56458E-06  293.0  end
pu-239    10  0.0  1.90205E-04  293.0  end
pu-240    10  0.0  4.84903E-05  293.0  end
pu-241    10  0.0  3.54637E-05  293.0  end
pu-242    10  0.0  7.88855E-06  293.0  end
am-241    10  0.0  9.48330E-07  293.0  end
am-243    10  0.0  1.46973E-06  293.0  end
o         10  0.0  4.58960E-02  293.0  end
mo-95     11  0.0  3.62035E-05  293.0  end
tc-99     11  0.0  4.23474E-05  293.0  end
ru-101    11  0.0  4.11253E-05  293.0  end
rh-103    11  0.0  2.24315E-05  293.0  end
ag-109    11  0.0  3.25417E-06  293.0  end
cs-133    11  0.0  4.35300E-05  293.0  end
nd-143    11  0.0  3.27311E-05  293.0  end
nd-145    11  0.0  2.53109E-05  293.0  end
sm-147    11  0.0  2.13489E-06  293.0  end
sm-149    11  0.0  1.58764E-07  293.0  end
sm-150    11  0.0  1.04831E-05  293.0  end
sm-151    11  0.0  7.57152E-07  293.0  end
sm-152    11  0.0  4.07216E-06  293.0  end
eu-153    11  0.0  4.02620E-06  293.0  end
gd-155    11  0.0  2.17789E-09  293.0  end
u-234     11  0.0  4.64520E-06  293.0  end
u-235     11  0.0  3.62040E-04  293.0  end
u-236     11  0.0  1.04715E-04  293.0  end
u-238     11  0.0  2.14209E-02  293.0  end
np-237    11  0.0  1.13465E-05  293.0  end
pu-238    11  0.0  3.43317E-06  293.0  end
pu-239    11  0.0  1.89296E-04  293.0  end
pu-240    11  0.0  4.77793E-05  293.0  end
pu-241    11  0.0  3.48434E-05  293.0  end
pu-242    11  0.0  7.61808E-06  293.0  end
am-241    11  0.0  9.21381E-07  293.0  end
am-243    11  0.0  1.40036E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  3.55003E-05  293.0  end
tc-99     12  0.0  4.16718E-05  293.0  end
ru-101    12  0.0  4.03882E-05  293.0  end
rh-103    12  0.0  2.20541E-05  293.0  end
ag-109    12  0.0  3.17115E-06  293.0  end
cs-133    12  0.0  4.28646E-05  293.0  end
nd-143    12  0.0  3.22871E-05  293.0  end
nd-145    12  0.0  2.49262E-05  293.0  end
sm-147    12  0.0  2.08961E-06  293.0  end
sm-149    12  0.0  1.58444E-07  293.0  end
sm-150    12  0.0  1.02803E-05  293.0  end
sm-151    12  0.0  7.49002E-07  293.0  end
sm-152    12  0.0  4.01113E-06  293.0  end
eu-153    12  0.0  3.92655E-06  293.0  end
gd-155    12  0.0  2.09893E-09  293.0  end
u-234     12  0.0  4.69469E-06  293.0  end
u-235     12  0.0  3.68617E-04  293.0  end
u-236     12  0.0  1.03762E-04  293.0  end
u-238     12  0.0  2.14328E-02  293.0  end
np-237    12  0.0  1.10775E-05  293.0  end
pu-238    12  0.0  3.28285E-06  293.0  end
pu-239    12  0.0  1.88202E-04  293.0  end
pu-240    12  0.0  4.69401E-05  293.0  end
pu-241    12  0.0  3.41111E-05  293.0  end
pu-242    12  0.0  7.30679E-06  293.0  end
am-241    12  0.0  8.89957E-07  293.0  end
am-243    12  0.0  1.32146E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  3.47703E-05  293.0  end
tc-99     13  0.0  4.09698E-05  293.0  end
ru-101    13  0.0  3.96259E-05  293.0  end
rh-103    13  0.0  2.16607E-05  293.0  end
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sm-151    10  0.0  1.03123E-06  293.0  end
sm-152    10  0.0  6.02810E-06  293.0  end
eu-153    10  0.0  7.65329E-06  293.0  end
gd-155    10  0.0  6.22255E-09  293.0  end
u-234     10  0.0  3.09877E-06  293.0  end
u-235     10  0.0  1.78570E-04  293.0  end
u-236     10  0.0  1.24837E-04  293.0  end
u-238     10  0.0  2.09524E-02  293.0  end
np-237    10  0.0  2.04542E-05  293.0  end
pu-238    10  0.0  1.12205E-05  293.0  end
pu-239    10  0.0  2.11916E-04  293.0  end
pu-240    10  0.0  7.26071E-05  293.0  end
pu-241    10  0.0  5.60387E-05  293.0  end
pu-242    10  0.0  2.20755E-05  293.0  end
am-241    10  0.0  1.99837E-06  293.0  end
am-243    10  0.0  5.78546E-06  293.0  end
o         10  0.0  4.58960E-02  293.0  end
mo-95     11  0.0  5.96054E-05  293.0  end
tc-99     11  0.0  6.45438E-05  293.0  end
ru-101    11  0.0  6.73738E-05  293.0  end
rh-103    11  0.0  3.40695E-05  293.0  end
ag-109    11  0.0  6.33343E-06  293.0  end
cs-133    11  0.0  6.45001E-05  293.0  end
nd-143    11  0.0  4.55337E-05  293.0  end
nd-145    11  0.0  3.77753E-05  293.0  end
sm-147    11  0.0  3.39266E-06  293.0  end
sm-149    11  0.0  1.62828E-07  293.0  end
sm-150    11  0.0  1.73540E-05  293.0  end
sm-151    11  0.0  1.02551E-06  293.0  end
sm-152    11  0.0  5.98922E-06  293.0  end
eu-153    11  0.0  7.57497E-06  293.0  end
gd-155    11  0.0  6.10778E-09  293.0  end
u-234     11  0.0  3.12797E-06  293.0  end
u-235     11  0.0  1.81642E-04  293.0  end
u-236     11  0.0  1.24662E-04  293.0  end
u-238     11  0.0  2.09638E-02  293.0  end
np-237    11  0.0  2.02676E-05  293.0  end
pu-238    11  0.0  1.10044E-05  293.0  end
pu-239    11  0.0  2.11648E-04  293.0  end
pu-240    11  0.0  7.21693E-05  293.0  end
pu-241    11  0.0  5.56822E-05  293.0  end
pu-242    11  0.0  2.17019E-05  293.0  end
am-241    11  0.0  1.97789E-06  293.0  end
am-243    11  0.0  5.65826E-06  293.0  end
o         11  0.0  4.58960E-02  293.0  end
mo-95     12  0.0  5.89852E-05  293.0  end
tc-99     12  0.0  6.39658E-05  293.0  end
ru-101    12  0.0  6.66326E-05  293.0  end
rh-103    12  0.0  3.37888E-05  293.0  end
ag-109    12  0.0  6.24551E-06  293.0  end
cs-133    12  0.0  6.39791E-05  293.0  end
nd-143    12  0.0  4.52460E-05  293.0  end
nd-145    12  0.0  3.74543E-05  293.0  end
sm-147    12  0.0  3.36757E-06  293.0  end
sm-149    12  0.0  1.62815E-07  293.0  end
sm-150    12  0.0  1.71725E-05  293.0  end
sm-151    12  0.0  1.01846E-06  293.0  end
sm-152    12  0.0  5.94121E-06  293.0  end
eu-153    12  0.0  7.47854E-06  293.0  end
gd-155    12  0.0  5.96845E-09  293.0  end
u-234     12  0.0  3.16419E-06  293.0  end
u-235     12  0.0  1.85468E-04  293.0  end
u-236     12  0.0  1.24429E-04  293.0  end
u-238     12  0.0  2.09777E-02  293.0  end
np-237    12  0.0  2.00338E-05  293.0  end
pu-238    12  0.0  1.07408E-05  293.0  end
pu-239    12  0.0  2.11309E-04  293.0  end
pu-240    12  0.0  7.16232E-05  293.0  end
pu-241    12  0.0  5.52386E-05  293.0  end
pu-242    12  0.0  2.12455E-05  293.0  end
am-241    12  0.0  1.95246E-06  293.0  end
am-243    12  0.0  5.50387E-06  293.0  end
o         12  0.0  4.58960E-02  293.0  end
mo-95     13  0.0  5.81452E-05  293.0  end
tc-99     13  0.0  6.31818E-05  293.0  end
ru-101    13  0.0  6.56329E-05  293.0  end
rh-103    13  0.0  3.34060E-05  293.0  end
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ag-109	13	0.0	3.08569E-06	293.0	end
cs-133	13	0.0	4.21720E-05	293.0	end
nd-143	13	0.0	3.18230E-05	293.0	end
nd-145	13	0.0	2.45262E-05	293.0	end
sm-147	13	0.0	2.04237E-06	293.0	end
sm-149	13	0.0	1.58092E-07	293.0	end
sm-150	13	0.0	1.00704E-05	293.0	end
sm-151	13	0.0	7.40535E-07	293.0	end
sm-152	13	0.0	3.94760E-06	293.0	end
eu-153	13	0.0	3.82381E-06	293.0	end
gd-155	13	0.0	2.01912E-09	293.0	end
u-234	13	0.0	4.74625E-06	293.0	end
u-235	13	0.0	3.75519E-04	293.0	end
u-236	13	0.0	1.02750E-04	293.0	end
u-238	13	0.0	2.14449E-02	293.0	end
np-237	13	0.0	1.07994E-05	293.0	end
pu-238	13	0.0	3.13132E-06	293.0	end
pu-239	13	0.0	1.87034E-04	293.0	end
pu-240	13	0.0	4.60643E-05	293.0	end
pu-241	13	0.0	3.33465E-05	293.0	end
pu-242	13	0.0	6.99086E-06	293.0	end
am-241	13	0.0	8.57613E-07	293.0	end
am-243	13	0.0	1.24251E-06	293.0	end
o	13	0.0	4.58960E-02	293.0	end
mo-95	14	0.0	3.36503E-05	293.0	end
tc-99	14	0.0	3.98934E-05	293.0	end
ru-101	14	0.0	3.84644E-05	293.0	end
rh-103	14	0.0	2.10564E-05	293.0	end
ag-109	14	0.0	2.95617E-06	293.0	end
cs-133	14	0.0	4.11080E-05	293.0	end
nd-143	14	0.0	3.11044E-05	293.0	end
nd-145	14	0.0	2.39117E-05	293.0	end
sm-147	14	0.0	1.96954E-06	293.0	end
sm-149	14	0.0	1.57521E-07	293.0	end
sm-150	14	0.0	9.74980E-06	293.0	end
sm-151	14	0.0	7.27564E-07	293.0	end
sm-152	14	0.0	3.84958E-06	293.0	end
eu-153	14	0.0	3.66778E-06	293.0	end
gd-155	14	0.0	1.90097E-09	293.0	end
u-234	14	0.0	4.82575E-06	293.0	end
u-235	14	0.0	3.86239E-04	293.0	end
u-236	14	0.0	1.01160E-04	293.0	end
u-238	14	0.0	2.14635E-02	293.0	end
np-237	14	0.0	1.03746E-05	293.0	end
pu-238	14	0.0	2.90787E-06	293.0	end
pu-239	14	0.0	1.85170E-04	293.0	end
pu-240	14	0.0	4.47126E-05	293.0	end
pu-241	14	0.0	3.21654E-05	293.0	end
pu-242	14	0.0	6.52088E-06	293.0	end
am-241	14	0.0	8.08648E-07	293.0	end
am-243	14	0.0	1.12732E-06	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	3.18747E-05	293.0	end
tc-99	15	0.0	3.81865E-05	293.0	end
ru-101	15	0.0	3.66371E-05	293.0	end
rh-103	15	0.0	2.00919E-05	293.0	end
ag-109	15	0.0	2.75461E-06	293.0	end
cs-133	15	0.0	3.94126E-05	293.0	end
nd-143	15	0.0	2.99492E-05	293.0	end
nd-145	15	0.0	2.29344E-05	293.0	end
sm-147	15	0.0	1.85309E-06	293.0	end
sm-149	15	0.0	1.56507E-07	293.0	end
sm-150	15	0.0	9.24455E-06	293.0	end
sm-151	15	0.0	7.06978E-07	293.0	end
sm-152	15	0.0	3.69315E-06	293.0	end
eu-153	15	0.0	3.42425E-06	293.0	end
gd-155	15	0.0	1.72412E-09	293.0	end
u-234	15	0.0	4.95257E-06	293.0	end
u-235	15	0.0	4.03591E-04	293.0	end
u-236	15	0.0	9.85388E-05	293.0	end
u-238	15	0.0	2.14923E-02	293.0	end
np-237	15	0.0	9.70838E-06	293.0	end
pu-238	15	0.0	2.57506E-06	293.0	end
pu-239	15	0.0	1.82032E-04	293.0	end
pu-240	15	0.0	4.25490E-05	293.0	end
pu-241	15	0.0	3.02743E-05	293.0	end
pu-242	15	0.0	5.81108E-06	293.0	end

ag-109	13	0.0	6.12685E-06	293.0	end
cs-133	13	0.0	6.32701E-05	293.0	end
nd-143	13	0.0	4.48518E-05	293.0	end
nd-145	13	0.0	3.70186E-05	293.0	end
sm-147	13	0.0	3.33277E-06	293.0	end
sm-149	13	0.0	1.62790E-07	293.0	end
sm-150	13	0.0	1.69264E-05	293.0	end
sm-151	13	0.0	1.00893E-06	293.0	end
sm-152	13	0.0	5.87595E-06	293.0	end
eu-153	13	0.0	7.34783E-06	293.0	end
gd-155	13	0.0	5.78279E-09	293.0	end
u-234	13	0.0	3.21365E-06	293.0	end
u-235	13	0.0	1.90732E-04	293.0	end
u-236	13	0.0	1.24088E-04	293.0	end
u-238	13	0.0	2.09964E-02	293.0	end
np-237	13	0.0	1.97225E-05	293.0	end
pu-238	13	0.0	1.03892E-05	293.0	end
pu-239	13	0.0	2.10837E-04	293.0	end
pu-240	13	0.0	7.08776E-05	293.0	end
pu-241	13	0.0	5.46243E-05	293.0	end
pu-242	13	0.0	2.06339E-05	293.0	end
am-241	13	0.0	1.91760E-06	293.0	end
am-243	13	0.0	5.29812E-06	293.0	end
o	13	0.0	4.58960E-02	293.0	end
mo-95	14	0.0	5.67702E-05	293.0	end
tc-99	14	0.0	6.18960E-05	293.0	end
ru-101	14	0.0	6.40068E-05	293.0	end
rh-103	14	0.0	3.27735E-05	293.0	end
ag-109	14	0.0	5.93369E-06	293.0	end
cs-133	14	0.0	6.21011E-05	293.0	end
nd-143	14	0.0	4.41957E-05	293.0	end
nd-145	14	0.0	3.63037E-05	293.0	end
sm-147	14	0.0	3.27372E-06	293.0	end
sm-149	14	0.0	1.62711E-07	293.0	end
sm-150	14	0.0	1.65226E-05	293.0	end
sm-151	14	0.0	9.93318E-07	293.0	end
sm-152	14	0.0	5.76859E-06	293.0	end
eu-153	14	0.0	7.13362E-06	293.0	end
gd-155	14	0.0	5.48548E-09	293.0	end
u-234	14	0.0	3.29553E-06	293.0	end
u-235	14	0.0	1.99550E-04	293.0	end
u-236	14	0.0	1.23472E-04	293.0	end
u-238	14	0.0	2.10262E-02	293.0	end
np-237	14	0.0	1.92622E-05	293.0	end
pu-238	14	0.0	9.82799E-06	293.0	end
pu-239	14	0.0	2.10043E-04	293.0	end
pu-240	14	0.0	6.96585E-05	293.0	end
pu-241	14	0.0	5.35700E-05	293.0	end
pu-242	14	0.0	1.96511E-05	293.0	end
am-241	14	0.0	1.85958E-06	293.0	end
am-243	14	0.0	4.96822E-06	293.0	end
o	14	0.0	4.58960E-02	293.0	end
mo-95	15	0.0	5.44836E-05	293.0	end
tc-99	15	0.0	5.97506E-05	293.0	end
ru-101	15	0.0	6.13299E-05	293.0	end
rh-103	15	0.0	3.17026E-05	293.0	end
ag-109	15	0.0	5.61562E-06	293.0	end
cs-133	15	0.0	6.01334E-05	293.0	end
nd-143	15	0.0	4.30734E-05	293.0	end
nd-145	15	0.0	3.51086E-05	293.0	end
sm-147	15	0.0	3.17009E-06	293.0	end
sm-149	15	0.0	1.62569E-07	293.0	end
sm-150	15	0.0	1.58494E-05	293.0	end
sm-151	15	0.0	9.67307E-07	293.0	end
sm-152	15	0.0	5.58826E-06	293.0	end
eu-153	15	0.0	6.77780E-06	293.0	end
gd-155	15	0.0	5.01444E-09	293.0	end
u-234	15	0.0	3.43436E-06	293.0	end
u-235	15	0.0	2.14776E-04	293.0	end
u-236	15	0.0	1.22265E-04	293.0	end
u-238	15	0.0	2.10753E-02	293.0	end
np-237	15	0.0	1.84416E-05	293.0	end
pu-238	15	0.0	8.92522E-06	293.0	end
pu-239	15	0.0	2.08586E-04	293.0	end
pu-240	15	0.0	6.75419E-05	293.0	end
pu-241	15	0.0	5.17740E-05	293.0	end
pu-242	15	0.0	1.80557E-05	293.0	end

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am-241    15  0.0  7.32731E-07  293.0  end
am-243    15  0.0  9.59052E-07  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  2.92630E-05  293.0  end
tc-99     16  0.0  3.56726E-05  293.0  end
ru-101    16  0.0  3.39805E-05  293.0  end
rh-103    16  0.0  1.86627E-05  293.0  end
ag-109    16  0.0  2.46676E-06  293.0  end
cs-133    16  0.0  3.69003E-05  293.0  end
nd-143    16  0.0  2.82133E-05  293.0  end
nd-145    16  0.0  2.14914E-05  293.0  end
sm-147    16  0.0  1.68059E-06  293.0  end
sm-149    16  0.0  1.54781E-07  293.0  end
sm-150    16  0.0  8.50893E-06  293.0  end
sm-151    16  0.0  6.76677E-07  293.0  end
sm-152    16  0.0  3.46028E-06  293.0  end
eu-153    16  0.0  3.07522E-06  293.0  end
gd-155    16  0.0  1.48630E-09  293.0  end
u-234     16  0.0  5.14101E-06  293.0  end
u-235     16  0.0  4.29922E-04  293.0  end
u-236     16  0.0  9.44464E-05  293.0  end
u-238     16  0.0  2.15333E-02  293.0  end
np-237    16  0.0  8.74397E-06  293.0  end
pu-238    16  0.0  2.13179E-06  293.0  end
pu-239    16  0.0  1.76977E-04  293.0  end
pu-240    16  0.0  3.93257E-05  293.0  end
pu-241    16  0.0  2.74606E-05  293.0  end
pu-242    16  0.0  4.84553E-06  293.0  end
am-241    16  0.0  6.25484E-07  293.0  end
am-243    16  0.0  7.42792E-07  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  2.49846E-05  293.0  end
tc-99     17  0.0  3.15498E-05  293.0  end
ru-101    17  0.0  2.97112E-05  293.0  end
rh-103    17  0.0  1.62961E-05  293.0  end
ag-109    17  0.0  2.01934E-06  293.0  end
cs-133    17  0.0  3.27452E-05  293.0  end
nd-143    17  0.0  2.52787E-05  293.0  end
nd-145    17  0.0  1.91118E-05  293.0  end
sm-147    17  0.0  1.39790E-06  293.0  end
sm-149    17  0.0  1.51262E-07  293.0  end
sm-150    17  0.0  7.32690E-06  293.0  end
sm-151    17  0.0  6.27006E-07  293.0  end
sm-152    17  0.0  3.07161E-06  293.0  end
eu-153    17  0.0  2.53023E-06  293.0  end
gd-155    17  0.0  1.15135E-09  293.0  end
u-234     17  0.0  5.45399E-06  293.0  end
u-235     17  0.0  4.75122E-04  293.0  end
u-236     17  0.0  8.71458E-05  293.0  end
u-238     17  0.0  2.15984E-02  293.0  end
np-237    17  0.0  7.21537E-06  293.0  end
pu-238    17  0.0  1.51896E-06  293.0  end
pu-239    17  0.0  1.67460E-04  293.0  end
pu-240    17  0.0  3.39682E-05  293.0  end
pu-241    17  0.0  2.28112E-05  293.0  end
pu-242    17  0.0  3.46675E-06  293.0  end
am-241    17  0.0  4.63818E-07  293.0  end
am-243    17  0.0  4.63625E-07  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  1.73104E-05  293.0  end
tc-99     18  0.0  2.41222E-05  293.0  end
ru-101    18  0.0  2.22734E-05  293.0  end
rh-103    18  0.0  1.19898E-05  293.0  end
ag-109    18  0.0  1.29862E-06  293.0  end
cs-133    18  0.0  2.51558E-05  293.0  end
nd-143    18  0.0  1.97172E-05  293.0  end
nd-145    18  0.0  1.47806E-05  293.0  end
sm-147    18  0.0  9.06763E-07  293.0  end
sm-149    18  0.0  1.42348E-07  293.0  end
sm-150    18  0.0  5.28886E-06  293.0  end
sm-151    18  0.0  5.37314E-07  293.0  end
sm-152    18  0.0  2.34710E-06  293.0  end
eu-153    18  0.0  1.64874E-06  293.0  end
gd-155    18  0.0  7.01769E-10  293.0  end
u-234     18  0.0  6.02958E-06  293.0  end
u-235     18  0.0  5.63255E-04  293.0  end
u-236     18  0.0  7.20874E-05  293.0  end
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am-241    15  0.0  1.76066E-06  293.0  end
am-243    15  0.0  4.44685E-06  293.0  end
o         15  0.0  4.58960E-02  293.0  end
mo-95     16  0.0  5.09290E-05  293.0  end
tc-99     16  0.0  5.63971E-05  293.0  end
ru-101    16  0.0  5.72361E-05  293.0  end
rh-103    16  0.0  2.99927E-05  293.0  end
ag-109    16  0.0  5.12974E-06  293.0  end
cs-133    16  0.0  5.70213E-05  293.0  end
nd-143    16  0.0  4.12493E-05  293.0  end
nd-145    16  0.0  3.32364E-05  293.0  end
sm-147    16  0.0  2.99597E-06  293.0  end
sm-149    16  0.0  1.62307E-07  293.0  end
sm-150    16  0.0  1.48009E-05  293.0  end
sm-151    16  0.0  9.26712E-07  293.0  end
sm-152    16  0.0  5.30372E-06  293.0  end
eu-153    16  0.0  6.22674E-06  293.0  end
gd-155    16  0.0  4.33744E-09  293.0  end
u-234     16  0.0  3.65669E-06  293.0  end
u-235     16  0.0  2.39857E-04  293.0  end
u-236     16  0.0  1.19951E-04  293.0  end
u-238     16  0.0  2.11489E-02  293.0  end
np-237    16  0.0  1.70778E-05  293.0  end
pu-238    16  0.0  7.61244E-06  293.0  end
pu-239    16  0.0  2.05961E-04  293.0  end
pu-240    16  0.0  6.40563E-05  293.0  end
pu-241    16  0.0  4.88499E-05  293.0  end
pu-242    16  0.0  1.56865E-05  293.0  end
am-241    16  0.0  1.60170E-06  293.0  end
am-243    16  0.0  3.70170E-06  293.0  end
o         16  0.0  4.58960E-02  293.0  end
mo-95     17  0.0  4.53387E-05  293.0  end
tc-99     17  0.0  5.10893E-05  293.0  end
ru-101    17  0.0  5.09628E-05  293.0  end
rh-103    17  0.0  2.72065E-05  293.0  end
ag-109    17  0.0  4.38946E-06  293.0  end
cs-133    17  0.0  5.20060E-05  293.0  end
nd-143    17  0.0  3.81946E-05  293.0  end
nd-145    17  0.0  3.02590E-05  293.0  end
sm-147    17  0.0  2.69260E-06  293.0  end
sm-149    17  0.0  1.61536E-07  293.0  end
sm-150    17  0.0  1.31508E-05  293.0  end
sm-151    17  0.0  8.62618E-07  293.0  end
sm-152    17  0.0  4.84635E-06  293.0  end
eu-153    17  0.0  5.37101E-06  293.0  end
gd-155    17  0.0  3.39934E-09  293.0  end
u-234     17  0.0  4.02008E-06  293.0  end
u-235     17  0.0  2.82758E-04  293.0  end
u-236     17  0.0  1.15231E-04  293.0  end
u-238     17  0.0  2.12574E-02  293.0  end
np-237    17  0.0  1.48982E-05  293.0  end
pu-238    17  0.0  5.78822E-06  293.0  end
pu-239    17  0.0  2.00871E-04  293.0  end
pu-240    17  0.0  5.82008E-05  293.0  end
pu-241    17  0.0  4.38693E-05  293.0  end
pu-242    17  0.0  1.22803E-05  293.0  end
am-241    17  0.0  1.34344E-06  293.0  end
am-243    17  0.0  2.68159E-06  293.0  end
o         17  0.0  4.58960E-02  293.0  end
mo-95     18  0.0  3.42666E-05  293.0  end
tc-99     18  0.0  4.04857E-05  293.0  end
ru-101    18  0.0  3.91026E-05  293.0  end
rh-103    18  0.0  2.13892E-05  293.0  end
ag-109    18  0.0  3.02721E-06  293.0  end
cs-133    18  0.0  4.16939E-05  293.0  end
nd-143    18  0.0  3.15008E-05  293.0  end
nd-145    18  0.0  2.42500E-05  293.0  end
sm-147    18  0.0  2.00967E-06  293.0  end
sm-149    18  0.0  1.57841E-07  293.0  end
sm-150    18  0.0  9.92606E-06  293.0  end
sm-151    18  0.0  7.34702E-07  293.0  end
sm-152    18  0.0  3.90359E-06  293.0  end
eu-153    18  0.0  3.75341E-06  293.0  end
gd-155    18  0.0  1.96535E-09  293.0  end
u-234     18  0.0  4.78195E-06  293.0  end
u-235     18  0.0  3.80319E-04  293.0  end
u-236     18  0.0  1.02041E-04  293.0  end
```

```
u-238    18  0.0  2.17085E-02  293.0  end
np-237   18  0.0  4.70199E-06  293.0  end
pu-238   18  0.0  7.31742E-07  293.0  end
pu-239   18  0.0  1.45650E-04  293.0  end
pu-240   18  0.0  2.42397E-05  293.0  end
pu-241   18  0.0  1.46019E-05  293.0  end
pu-242   18  0.0  1.61382E-06  293.0  end
am-241   18  0.0  2.28391E-07  293.0  end
am-243   18  0.0  1.58691E-07  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  3.60489E-06  293.0  end
tc-99    19  0.0  9.62205E-06  293.0  end
ru-101   19  0.0  8.62330E-06  293.0  end
rh-103   19  0.0  3.72052E-06  293.0  end
ag-109   19  0.0  2.80964E-07  293.0  end
cs-133   19  0.0  1.00124E-05  293.0  end
nd-143   19  0.0  7.82217E-06  293.0  end
nd-145   19  0.0  6.11608E-06  293.0  end
sm-147   19  0.0  1.66025E-07  293.0  end
sm-149   19  0.0  1.12591E-07  293.0  end
sm-150   19  0.0  1.77893E-06  293.0  end
sm-151   19  0.0  3.39708E-07  293.0  end
sm-152   19  0.0  8.48281E-07  293.0  end
eu-153   19  0.0  4.06906E-07  293.0  end
gd-155   19  0.0  2.38783E-10  293.0  end
u-234    19  0.0  7.18904E-06  293.0  end
u-235    19  0.0  7.63846E-04  293.0  end
u-236    19  0.0  3.50434E-05  293.0  end
u-238    19  0.0  2.18987E-02  293.0  end
np-237   19  0.0  1.12639E-06  293.0  end
pu-238   19  0.0  6.67749E-08  293.0  end
pu-239   19  0.0  7.78525E-05  293.0  end
pu-240   19  0.0  6.56349E-06  293.0  end
pu-241   19  0.0  2.16806E-06  293.0  end
pu-242   19  0.0  8.57529E-08  293.0  end
am-241   19  0.0  1.30160E-08  293.0  end
am-243   19  0.0  2.92719E-09  293.0  end
o        19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id36576_b30.mip

```
u-238    18  0.0  2.14533E-02  293.0  end
np-237   18  0.0  1.06080E-05  293.0  end
pu-238   18  0.0  3.02951E-06  293.0  end
pu-239   18  0.0  1.86207E-04  293.0  end
pu-240   18  0.0  4.54577E-05  293.0  end
pu-241   18  0.0  3.28165E-05  293.0  end
pu-242   18  0.0  6.77733E-06  293.0  end
am-241   18  0.0  8.35494E-07  293.0  end
am-243   18  0.0  1.18983E-06  293.0  end
o        18  0.0  4.58960E-02  293.0  end
mo-95    19  0.0  1.07992E-05  293.0  end
tc-99    19  0.0  1.76762E-05  293.0  end
ru-101   19  0.0  1.60668E-05  293.0  end
rh-103   19  0.0  8.25125E-06  293.0  end
ag-109   19  0.0  7.75062E-07  293.0  end
cs-133   19  0.0  1.84718E-05  293.0  end
nd-143   19  0.0  1.46035E-05  293.0  end
nd-145   19  0.0  1.09672E-05  293.0  end
sm-147   19  0.0  5.27112E-07  293.0  end
sm-149   19  0.0  1.31370E-07  293.0  end
sm-150   19  0.0  3.63945E-06  293.0  end
sm-151   19  0.0  4.57408E-07  293.0  end
sm-152   19  0.0  1.69108E-06  293.0  end
eu-153   19  0.0  1.00906E-06  293.0  end
gd-155   19  0.0  4.44172E-10  293.0  end
u-234    19  0.0  6.53976E-06  293.0  end
u-235    19  0.0  6.47341E-04  293.0  end
u-236    19  0.0  5.69246E-05  293.0  end
u-238    19  0.0  2.17965E-02  293.0  end
np-237   19  0.0  2.86069E-06  293.0  end
pu-238   19  0.0  3.20752E-07  293.0  end
pu-239   19  0.0  1.20509E-04  293.0  end
pu-240   19  0.0  1.59776E-05  293.0  end
pu-241   19  0.0  8.15522E-06  293.0  end
pu-242   19  0.0  6.30115E-07  293.0  end
am-241   19  0.0  9.26971E-08  293.0  end
am-243   19  0.0  4.31533E-08  293.0  end
o        19  0.0  4.58960E-02  293.0  end
íííííííííííííííííííííííííííííííííííííííííííí
```

EOF ed24_f01_id36576_b50.mip

Appendix II

Structure of the isotopic inventory files for the uniform burn-up distributions

```
BUNUSP Version  7                                             17.05.2005  14:25:51

ed13_f01.sca: siehe Page    1 in Protokollfile ed13_f01.PRT
ííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííí

Fuel No.  1
enrich.: 4.000E+00 wt.-%   burnup: 3.00000E+01 MWd/kg U                    SCALE



 mo-95         1                   0.0  3.43000E-05  293.0  end
 tc-99         1                   0.0  4.04760E-05  293.0  end
 ru-101        1                   0.0  3.83190E-05  293.0  end
 rh-103        1                   0.0  2.03460E-05  293.0  end
 ag-109        1                   0.0  2.70110E-06  293.0  end
 cs-133        1                   0.0  4.19200E-05  293.0  end
 nd-143        1                   0.0  3.04210E-05  293.0  end
 nd-145        1                   0.0  2.43640E-05  293.0  end
 sm-147        1                   0.0  2.17010E-06  293.0  end
 sm-149        1                   0.0  1.04440E-07  293.0  end
 sm-150        1                   0.0  9.54670E-06  293.0  end
 sm-151        1                   0.0  5.17350E-07  293.0  end
 sm-152        1                   0.0  4.04410E-06  293.0  end
 eu-153        1                   0.0  3.46580E-06  293.0  end
 gd-155        1                   0.0  1.07780E-09  293.0  end
 u-234         1                   0.0  5.14820E-06  293.0  end
 u-235         1                   0.0  3.50970E-04  293.0  end
 u-236         1                   0.0  1.01040E-04  293.0  end
 u-238         1                   0.0  2.15690E-02  293.0  end
 np-237        1                   0.0  8.27450E-06  293.0  end
 pu-238        1                   0.0  2.10600E-06  293.0  end
 pu-239        1                   0.0  1.31020E-04  293.0  end
 pu-240        1                   0.0  3.96790E-05  293.0  end
 pu-241        1                   0.0  2.47510E-05  293.0  end
 pu-242        1                   0.0  6.18580E-06  293.0  end
 am-241        1                   0.0  6.00040E-07  293.0  end
 am-243        1                   0.0  8.76520E-07  293.0  end
 o             1                   0.0  4.58960E-02  293.0  end
```

not exposed to CR insertion

```
 mo-95         2                   0.0  3.34980E-05  293.0  end
 tc-99         2                   0.0  3.97470E-05  293.0  end
 ru-101        2                   0.0  3.83070E-05  293.0  end
 rh-103        2                   0.0  2.09740E-05  293.0  end
 ag-109        2                   0.0  2.93870E-06  293.0  end
 cs-133        2                   0.0  4.09630E-05  293.0  end
 nd-143        2                   0.0  3.10060E-05  293.0  end
 nd-145        2                   0.0  2.38280E-05  293.0  end
 sm-147        2                   0.0  1.95960E-06  293.0  end
 sm-149        2                   0.0  1.57440E-07  293.0  end
 sm-150        2                   0.0  9.70630E-06  293.0  end
 sm-151        2                   0.0  7.25800E-07  293.0  end
 sm-152        2                   0.0  3.83620E-06  293.0  end
 eu-153        2                   0.0  3.64670E-06  293.0  end
 gd-155        2                   0.0  1.88530E-09  293.0  end
 u-234         2                   0.0  4.83660E-06  293.0  end
 u-235         2                   0.0  3.87710E-04  293.0  end
 u-236         2                   0.0  1.00940E-04  293.0  end
 u-238         2                   0.0  2.14660E-02  293.0  end
 np-237        2                   0.0  1.03170E-05  293.0  end
 pu-238        2                   0.0  2.87830E-06  293.0  end
 pu-239        2                   0.0  1.84910E-04  293.0  end
 pu-240        2                   0.0  4.45280E-05  293.0  end
 pu-241        2                   0.0  3.20040E-05  293.0  end
 pu-242        2                   0.0  6.45830E-06  293.0  end
 am-241        2                   0.0  8.02050E-07  293.0  end
 am-243        2                   0.0  1.11220E-06  293.0  end
 o             2                   0.0  4.58960E-02  293.0  end
```

exposed to CR insertion

```
ííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííííí
EOF unifo_cr_part_b30.mip
```

Isotopic inventory files for the uniform burn-up distributions

Files for no CR insertion $(d_{CR} = 0)$: Files “unifo_cr_out_bmm.mip”

File unifo_cr_out_b30.mip

```
Burn-up:          30 MWd/kg U

 mo-95     1  0.0  3.43000E-05  293.0  end
 tc-99     1  0.0  4.04760E-05  293.0  end
 ru-101    1  0.0  3.83190E-05  293.0  end
 rh-103    1  0.0  2.03460E-05  293.0  end
 ag-109    1  0.0  2.70110E-06  293.0  end
 cs-133    1  0.0  4.19200E-05  293.0  end
 nd-143    1  0.0  3.04210E-05  293.0  end
 nd-145    1  0.0  2.43640E-05  293.0  end
 sm-147    1  0.0  2.17010E-06  293.0  end
 sm-149    1  0.0  1.04440E-07  293.0  end
 sm-150    1  0.0  9.54670E-06  293.0  end
 sm-151    1  0.0  5.17350E-07  293.0  end
 sm-152    1  0.0  4.04410E-06  293.0  end
 eu-153    1  0.0  3.46580E-06  293.0  end
 gd-155    1  0.0  1.07780E-09  293.0  end
 u-234     1  0.0  5.14820E-06  293.0  end
 u-235     1  0.0  3.50970E-04  293.0  end
 u-236     1  0.0  1.01040E-04  293.0  end
 u-238     1  0.0  2.15690E-02  293.0  end
 np-237    1  0.0  8.27450E-06  293.0  end
 pu-238    1  0.0  2.10600E-06  293.0  end
 pu-239    1  0.0  1.31020E-04  293.0  end
 pu-240    1  0.0  3.96790E-05  293.0  end
 pu-241    1  0.0  2.47510E-05  293.0  end
 pu-242    1  0.0  6.18580E-06  293.0  end
 am-241    1  0.0  6.00040E-07  293.0  end
 am-243    1  0.0  8.76520E-07  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
ííííííííííííííííííííííííííííííííííííííííí
```

EOF unifo_cr_out_b30.mip

File unifo_cr_out_b50.mip

```
                  50MWd/kg U

 mo-95     1  0.0  5.72240E-05  293.0  end
 tc-99     1  0.0  6.23090E-05  293.0  end
 ru-101    1  0.0  6.31850E-05  293.0  end
 rh-103    1  0.0  3.06280E-05  293.0  end
 ag-109    1  0.0  5.58480E-06  293.0  end
 cs-133    1  0.0  6.29930E-05  293.0  end
 nd-143    1  0.0  3.99430E-05  293.0  end
 nd-145    1  0.0  3.65320E-05  293.0  end
 sm-147    1  0.0  3.65830E-06  293.0  end
 sm-149    1  0.0  9.27020E-08  293.0  end
 sm-150    1  0.0  1.61240E-05  293.0  end
 sm-151    1  0.0  6.20580E-07  293.0  end
 sm-152    1  0.0  6.06620E-06  293.0  end
 eu-153    1  0.0  6.88450E-06  293.0  end
 gd-155    1  0.0  2.62420E-09  293.0  end
 u-234     1  0.0  3.60400E-06  293.0  end
 u-235     1  0.0  1.50820E-04  293.0  end
 u-236     1  0.0  1.24590E-04  293.0  end
 u-238     1  0.0  2.12040E-02  293.0  end
 np-237    1  0.0  1.55500E-05  293.0  end
 pu-238    1  0.0  7.16020E-06  293.0  end
 pu-239    1  0.0  1.33540E-04  293.0  end
 pu-240    1  0.0  5.99460E-05  293.0  end
 pu-241    1  0.0  3.77900E-05  293.0  end
 pu-242    1  0.0  2.00310E-05  293.0  end
 am-241    1  0.0  1.16630E-06  293.0  end
 am-243    1  0.0  4.31500E-06  293.0  end
 o         1  0.0  4.58960E-02  293.0  end
ííííííííííííííííííííííííííííííííííííííííí
```

EOF unifo_cr_out_b50.mip

Files for partial CR insertion $(0\,\text{cm} < d_{CR} < 365.76\ \text{cm})$: Files “unifo_cr_part_bmm.mip”

File unifo_cr_part_b30.mip

```
Burn-up:          30 MWd/kg U

 mo-95     1  0.0  3.43000E-05  293.0  end
 tc-99     1  0.0  4.04760E-05  293.0  end
 ru-101    1  0.0  3.83190E-05  293.0  end
 rh-103    1  0.0  2.03460E-05  293.0  end
 ag-109    1  0.0  2.70110E-06  293.0  end
 cs-133    1  0.0  4.19200E-05  293.0  end
 nd-143    1  0.0  3.04210E-05  293.0  end
 nd-145    1  0.0  2.43640E-05  293.0  end
 sm-147    1  0.0  2.17010E-06  293.0  end
 sm-149    1  0.0  1.04440E-07  293.0  end
 sm-150    1  0.0  9.54670E-06  293.0  end
 sm-151    1  0.0  5.17350E-07  293.0  end
 sm-152    1  0.0  4.04410E-06  293.0  end
 eu-153    1  0.0  3.46580E-06  293.0  end
 gd-155    1  0.0  1.07780E-09  293.0  end
 u-234     1  0.0  5.14820E-06  293.0  end
 u-235     1  0.0  3.50970E-04  293.0  end
 u-236     1  0.0  1.01040E-04  293.0  end
 u-238     1  0.0  2.15690E-02  293.0  end
 np-237    1  0.0  8.27450E-06  293.0  end
 pu-238    1  0.0  2.10600E-06  293.0  end
 pu-239    1  0.0  1.31020E-04  293.0  end
 pu-240    1  0.0  3.96790E-05  293.0  end
 pu-241    1  0.0  2.47510E-05  293.0  end
 pu-242    1  0.0  6.18580E-06  293.0  end
 am-241    1  0.0  6.00040E-07  293.0  end
 am-243    1  0.0  8.76520E-07  293.0  end
```

File unifo_cr_part_b50.mip

```
                  50MWd/kg U

 mo-95     1  0.0  5.72240E-05  293.0  end
 tc-99     1  0.0  6.23090E-05  293.0  end
 ru-101    1  0.0  6.31850E-05  293.0  end
 rh-103    1  0.0  3.06280E-05  293.0  end
 ag-109    1  0.0  5.58480E-06  293.0  end
 cs-133    1  0.0  6.29930E-05  293.0  end
 nd-143    1  0.0  3.99430E-05  293.0  end
 nd-145    1  0.0  3.65320E-05  293.0  end
 sm-147    1  0.0  3.65830E-06  293.0  end
 sm-149    1  0.0  9.27020E-08  293.0  end
 sm-150    1  0.0  1.61240E-05  293.0  end
 sm-151    1  0.0  6.20580E-07  293.0  end
 sm-152    1  0.0  6.06620E-06  293.0  end
 eu-153    1  0.0  6.88450E-06  293.0  end
 gd-155    1  0.0  2.62420E-09  293.0  end
 u-234     1  0.0  3.60400E-06  293.0  end
 u-235     1  0.0  1.50820E-04  293.0  end
 u-236     1  0.0  1.24590E-04  293.0  end
 u-238     1  0.0  2.12040E-02  293.0  end
 np-237    1  0.0  1.55500E-05  293.0  end
 pu-238    1  0.0  7.16020E-06  293.0  end
 pu-239    1  0.0  1.33540E-04  293.0  end
 pu-240    1  0.0  5.99460E-05  293.0  end
 pu-241    1  0.0  3.77900E-05  293.0  end
 pu-242    1  0.0  2.00310E-05  293.0  end
 am-241    1  0.0  1.16630E-06  293.0  end
 am-243    1  0.0  4.31500E-06  293.0  end
```

```
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  3.34980E-05  293.0  end
 tc-99     2  0.0  3.97470E-05  293.0  end
 ru-101    2  0.0  3.83070E-05  293.0  end
 rh-103    2  0.0  2.09740E-05  293.0  end
 ag-109    2  0.0  2.93870E-06  293.0  end
 cs-133    2  0.0  4.09630E-05  293.0  end
 nd-143    2  0.0  3.10060E-05  293.0  end
 nd-145    2  0.0  2.38280E-05  293.0  end
 sm-147    2  0.0  1.95960E-06  293.0  end
 sm-149    2  0.0  1.57440E-07  293.0  end
 sm-150    2  0.0  9.70630E-06  293.0  end
 sm-151    2  0.0  7.25800E-07  293.0  end
 sm-152    2  0.0  3.83620E-06  293.0  end
 eu-153    2  0.0  3.64670E-06  293.0  end
 gd-155    2  0.0  1.88530E-09  293.0  end
 u-234     2  0.0  4.83660E-06  293.0  end
 u-235     2  0.0  3.87710E-04  293.0  end
 u-236     2  0.0  1.00940E-04  293.0  end
 u-238     2  0.0  2.14660E-02  293.0  end
 np-237    2  0.0  1.03170E-05  293.0  end
 pu-238    2  0.0  2.87830E-06  293.0  end
 pu-239    2  0.0  1.84910E-04  293.0  end
 pu-240    2  0.0  4.45280E-05  293.0  end
 pu-241    2  0.0  3.20040E-05  293.0  end
 pu-242    2  0.0  6.45830E-06  293.0  end
 am-241    2  0.0  8.02050E-07  293.0  end
 am-243    2  0.0  1.11220E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
ííííííííííííííííííííííííííííííííííííííííííííí
```

EOF unifo_cr_part_b30.mip

```
 o         1  0.0  4.58960E-02  293.0  end
 mo-95     2  0.0  5.57010E-05  293.0  end
 tc-99     2  0.0  6.08940E-05  293.0  end
 ru-101    2  0.0  6.27510E-05  293.0  end
 rh-103    2  0.0  3.22760E-05  293.0  end
 ag-109    2  0.0  5.78450E-06  293.0  end
 cs-133    2  0.0  6.11850E-05  293.0  end
 nd-143    2  0.0  4.36760E-05  293.0  end
 nd-145    2  0.0  3.57460E-05  293.0  end
 sm-147    2  0.0  3.22610E-06  293.0  end
 sm-149    2  0.0  1.62640E-07  293.0  end
 sm-150    2  0.0  1.62080E-05  293.0  end
 sm-151    2  0.0  9.81170E-07  293.0  end
 sm-152    2  0.0  5.68460E-06  293.0  end
 eu-153    2  0.0  6.96710E-06  293.0  end
 gd-155    2  0.0  5.26120E-09  293.0  end
 u-234     2  0.0  3.36000E-06  293.0  end
 u-235     2  0.0  2.06580E-04  293.0  end
 u-236     2  0.0  1.22940E-04  293.0  end
 u-238     2  0.0  2.10490E-02  293.0  end
 np-237    2  0.0  1.89040E-05  293.0  end
 pu-238    2  0.0  9.40170E-06  293.0  end
 pu-239    2  0.0  2.09390E-04  293.0  end
 pu-240    2  0.0  6.86910E-05  293.0  end
 pu-241    2  0.0  5.27290E-05  293.0  end
 pu-242    2  0.0  1.89000E-05  293.0  end
 am-241    2  0.0  1.81370E-06  293.0  end
 am-243    2  0.0  4.71950E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
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```

EOF unifo_cr_part_b50.mip

Files for full CR insertion $(d_{CR} = 365.76 \text{ cm})$: Files “unifo_cr_full_bmm.mip”

File unifo_cr_full_b30.mip

```
Burn-up:          30 MWd/kg U

 mo-95     2  0.0  3.34980E-05  293.0  end
 tc-99     2  0.0  3.97470E-05  293.0  end
 ru-101    2  0.0  3.83070E-05  293.0  end
 rh-103    2  0.0  2.09740E-05  293.0  end
 ag-109    2  0.0  2.93870E-06  293.0  end
 cs-133    2  0.0  4.09630E-05  293.0  end
 nd-143    2  0.0  3.10060E-05  293.0  end
 nd-145    2  0.0  2.38280E-05  293.0  end
 sm-147    2  0.0  1.95960E-06  293.0  end
 sm-149    2  0.0  1.57440E-07  293.0  end
 sm-150    2  0.0  9.70630E-06  293.0  end
 sm-151    2  0.0  7.25800E-07  293.0  end
 sm-152    2  0.0  3.83620E-06  293.0  end
 eu-153    2  0.0  3.64670E-06  293.0  end
 gd-155    2  0.0  1.88530E-09  293.0  end
 u-234     2  0.0  4.83660E-06  293.0  end
 u-235     2  0.0  3.87710E-04  293.0  end
 u-236     2  0.0  1.00940E-04  293.0  end
 u-238     2  0.0  2.14660E-02  293.0  end
 np-237    2  0.0  1.03170E-05  293.0  end
 pu-238    2  0.0  2.87830E-06  293.0  end
 pu-239    2  0.0  1.84910E-04  293.0  end
 pu-240    2  0.0  4.45280E-05  293.0  end
 pu-241    2  0.0  3.20040E-05  293.0  end
 pu-242    2  0.0  6.45830E-06  293.0  end
 am-241    2  0.0  8.02050E-07  293.0  end
 am-243    2  0.0  1.11220E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
ííííííííííííííííííííííííííííííííííííííííííííí
```

EOF unifo_cr_full_b30.mip

File unifo_cr_full_b50.mip

```
                  50MWd/kg U

 mo-95     2  0.0  5.57010E-05  293.0  end
 tc-99     2  0.0  6.08940E-05  293.0  end
 ru-101    2  0.0  6.27510E-05  293.0  end
 rh-103    2  0.0  3.22760E-05  293.0  end
 ag-109    2  0.0  5.78450E-06  293.0  end
 cs-133    2  0.0  6.11850E-05  293.0  end
 nd-143    2  0.0  4.36760E-05  293.0  end
 nd-145    2  0.0  3.57460E-05  293.0  end
 sm-147    2  0.0  3.22610E-06  293.0  end
 sm-149    2  0.0  1.62640E-07  293.0  end
 sm-150    2  0.0  1.62080E-05  293.0  end
 sm-151    2  0.0  9.81170E-07  293.0  end
 sm-152    2  0.0  5.68460E-06  293.0  end
 eu-153    2  0.0  6.96710E-06  293.0  end
 gd-155    2  0.0  5.26120E-09  293.0  end
 u-234     2  0.0  3.36000E-06  293.0  end
 u-235     2  0.0  2.06580E-04  293.0  end
 u-236     2  0.0  1.22940E-04  293.0  end
 u-238     2  0.0  2.10490E-02  293.0  end
 np-237    2  0.0  1.89040E-05  293.0  end
 pu-238    2  0.0  9.40170E-06  293.0  end
 pu-239    2  0.0  2.09390E-04  293.0  end
 pu-240    2  0.0  6.86910E-05  293.0  end
 pu-241    2  0.0  5.27290E-05  293.0  end
 pu-242    2  0.0  1.89000E-05  293.0  end
 am-241    2  0.0  1.81370E-06  293.0  end
 am-243    2  0.0  4.71950E-06  293.0  end
 o         2  0.0  4.58960E-02  293.0  end
ííííííííííííííííííííííííííííííííííííííííííííí
```

EOF unifo_cr_full_b50.mip

Appendix III

Excerpt of the file "p2e_results_name-xls"

Nomenclature:

AVB:= Average Burnup /MWd/kg U

CRID:= control rod insertion depth / cm

NGC:= Total number of neutron generations calculated per calculation run

NIGS:= Number of initial generationms skipped per calculation run

NPG:= Number of neutrons per generation

keff:= mean value of the neutron multiplication factor for the NGC-NIGS generations evaluated

Sigma:= Standard deviation of the keff mean

		Profile No. 1 -->						Profile No. 2 -->				
		AVB=30	AVB=30	AVB=30	AVB=30	AVB=30	AVB=30	AVB=50	AVB=50	AVB=50	AVB=50	AVB=50
		CRID=0	CRID=5.22	CRID=10.45	...	CRID=94.05	CRID=365.76	CRID=0	CRID=5.22	CRID=10.45	…	CRID=365.76
Calculation run No.1	keff											
	sigma											
	NGC											
	NIGS											
	NPG											
Calculation run No.2	keff											
	sigma											
	NGC											
	NIGS											
	NPG											
Calculation run No.3	keff											
	sigma											
	NGC											
	NIGS											
	NPG											
…etc.												

Appendix IV
Participants and Analysis Methods

Country:	**Belgium**
Company:	Tractebel Engineering – Suez
Participants:	Gwendoline de Hemptinne & Philippe Maes
Code:	MCNP5 1.40
Library:	ENDF-B/V - based tables from standard library set distributed with MCNPX and MCNP, Zr: ENDF-B/VI table from same source

Description of computer code and data library: Not relevant given the wide distribution of MCNP and MCNPX.

Tallies:	19 or 20 F4 single-bin tallies (rather than a single, multi-bin tally), to ensure maximal use of the code's built-in statistical checks.
Documentation:	p2e_results_tractebel_engineering.xls

Source Convergence:

We applied the procedure recommended in Section 3.2 of the benchmark specification to the following case: (reference B/U distribution, average value 50MWd/kg, 62.7 cm rod insertion). The number of active cycles and the number of source neutrons per cycle were set at 4000 and 12000 respectively, in order to get a 10 pcm standard deviation on k.

The number of settling stages was set to 300, 1000, 2000, 3000 and 4000 and each case was run 4 times with different seeds. According to the prescribed test procedure, 300 starting cycles are sufficient and this number was kept for the 56 “production” runs.

Remarks:

1. We feel normalisation formula (3.1)[a)] might contain a typo and should read:

$$\rho_i = \frac{\frac{1}{V_i}\int\limits_{V_i} \Sigma\Phi drdE}{\frac{1}{\sum\limits_j V_j}\sum\limits_j \int\limits_{V_j} \Sigma\Phi drdE}$$

However, in order to avoid inconsistencies with other contributions, we applied it unchanged[b)].

2. Several zero or nonsignificant tallies are encountered in the lower fuel regions. We consider this acceptable in view of the overall trend of the fission distribution. In our view, the only way to produce significant tallies in such cases would be to bias the sampling towards those regions, i.e. away from the regions of high importance w.r. reactivity.

a) Formula (3.1) given in the benchmaek specification [6].

b) Comment J.C. Neuber: Formula (3.1) of [6] is meant as given since the intention was to get estimates for the fission probability density. Formula (3.1) follows from the formula for the number of fissions per unit time in an axial zone. Since the axial zones are different in volume, the number of fissions per unit time in an axial zone has to be divided by the volume of that axial zone in order to make different axial zones comparable. Normalization to one for the whole system results then in formula (3.1) of [4]. This has been shown in the Phase II-C report, section 1.1.3, [4].

Country: **Finland**
Institute: VTT Technical Research Centre of Finland
Participant: Mr. Anssu Ranta-aho M.Sc., P.O. Box 1000, FI-02044 VTT, FINLAND, Tel. +358 20 722 5019, Telefax +358 20 722 5000, mailto:Anssu.Ranta-aho@vtt.fi
Code: MCNP4C
Library: JEF-2.2
Description of computer code and data library: MCNP4C Monte Carlo particle transport code. JEF-2.2 based MCB; multi-temperature library prepared at the Royal Institute of Technology (KTH, Sweden).
Documentation: p2e_results_vtt_180706.xls

Country: **France**
Institute: CEA Commisariat à l'Énergie
Participant: Yannick Peneliau
Code: TRIPOLI 4.3.3
Library: JEF2.2
Description of computer code and data library: TRIPOLI-4 is directly compatible with pointwise cross-sections produced by the NJOY processing code system. It may also be run with homogenised multigroup cross-sections, and multigroup cross-sections with probability tables. It computes the following quantities: flux, current, reaction rates, dose equivalent rates, deposit of energy, recoil energy and multiplication factor (in criticality mode). The associated types of estimator are collision, tracklength, surface and point detectors. The geometry may be described by predefined shapes combination and/or surface equations. Complex lattices and lattices of lattices are available. The source description is factorised in space, energy, direction and time, providing the user with an extended choice through tabulated or analytical laws. TRIPOLI-4 makes use of several variance reduction techniques, which are essential in shielding calculations. The code has perturbation estimation capabilities (concentration, density), using the correlated sampling technique.
Documentation: p2e_results_cea.xls

Country: **France**
Institute: IRSN L'Institute de Radioprotection et de Sûreté Nucléaire
Participant: Ludyvine Jutier
Code, Library: All information obtained is given in Table 7.1 of the report on hand
Documentation: p2e_results_irsn.xls

Country: **France**
Company: TN International
Participant: Marcel Tardy
Code, Library: All information obtained is given in Table 7.1 of the report on hand
Documentation: p2e_results_tni.xls

Country: **Germany**
Company: AREVA NP GmbH
Participant: Jens Christian Neuber
Code: SCALE 5.1
Library: 44-group ENDF/B-V derived cross section library 44GROUPNDF5
Description of computer code and data library: Calculations were performed with the aid of the Criticality Safety Analysis Sequence CSAS25 of the SCALE-5.1 code package. CSAS25 employs the program modules BONAMI, NITAWL-III and KENO V.a. The code KENO V.a treats an arbitrary three-dimensional configuration of materials in geometric cells bounded by first-degree surfaces and some special second degree surfaces. KENO V.a solves the multi-energy-group form of the neutron transport equation as an eigenvalue problem through employment of Monte Carlo techniques.

The 44-group ENDF/B-V derived cross-section library 44GROUPNDF5 has been developed for use in the analysis of fresh and spent fuel as well as radioactive waste systems. This broad group library has been collapsed from the ENDF/B-V derived fine-group 238GROUPNDF5 cross-section library of the SCALE system which includes all nuclides (more than 300) from the ENDF/B-V data files. Broad-group boundaries were chosen as a subset of the parent 238GROUPNDF5 boundaries, emphasising the key spectral aspects of typical LWR fuel configurations. The cross-section library 44GROUPNDF5 was verified many times with the aid of various kinds of benchmark problems and critical experiments against its parent 238GROUPNDF5 library. It has been found that the broad 44-group structure is an acceptable representation of its parent 238-group library for thermal as well as hard fast spectrum systems, whereas intermediate spectrum systems require either a more detailed group structure in this energy range or a more appropriate collapsing spectrum. Accordingly, it has been found that the 44-group library is an accurate tool in the prediction of criticality for arrangements of LWR fuel assemblies, as would be encountered in fresh and spent fuel storage configurations and transportation packages in particular. Validation results for LWR-type uranium-oxide fuel show nearly no bias. A positive bias (overestimation of k_{eff}) of 0.5 to 1 % has been observed for very thermal mixed-oxide systems due to inadequate representation of plutonium cross-sections, possibly in the ENDF/B-V data.
Documentation: p2e_areva_keff_scale51.xls, p2e_areva_fissdens_scale51_norm.xls

Country: **Germany**
Company: AREVA NP GmbH
Participant: Wolfgang Tippl, Jens Christian Neuber
Code: MCNP5 Versions 1.30 and 1.40
Library: ENDF/B-6 and ENDF/B-8 in conjunction with Version 1.30 of MCNP5
LANL/T16 in conjunction with Version 1.40 of MCNP5
Description of computer code and data library: MCNP is a three-dimensional general purpose coupled neutron-photon-electron Monte Carlo code with an option to perform criticality

calculations, i.e. to calculate eigenvalues for critical systems. MCNP treats an arbitrary three-dimensional configuration of materials in geometric cells bounded by first- and second-degree surfaces and some special fourth-degree surfaces.

MCNP uses continuous-energy nuclear and atomic data libraries. For neutrons, all reactions given in a particular cross-section evaluation are accounted for, and the neutron energy ranges from 10^{-5} eV to 20 MeV for all isotopes (and up to 150 MeV for some isotopes). The primary sources of nuclear data are evaluations from systems such as the Evaluated Nuclear Data File (ENDF), the Evaluated Nuclear Data Library (ENDL) as well as compilations from Livermore and evaluations from the Nuclear Physics Group at Los Alamos (LANL/T-16). For the Phase II-E benchmark exercises data from the versions B-VI.6 and B-VI.8 from the ENDF system as well as data from the LANL/T-16 evaluation were used.

For neutron reactions nuclear data tables exist, and thermal neutrons are described by both the free gas and $S(\alpha,\beta)$ models. Neutron reaction tables are available for approximately 100 isotopes and elements. Multiple tables for a single isotope are provided primarily because data have been derived from different cross-section evaluations (and different releases of these evaluations), but also because of different temperature regimes. Data at different temperatures are available for different materials. Data for hydrogen in light water, which is of particular interest to the Phase II-E benchmark exercises, are available for temperatures of 294 K, 400 K, and a few higher temperatures.

Documentation: p2e_areva_keff_mcnp5-130.xls, p2e_areva_keff_mcnp5-140.xls

Country: Germany

Institute: BfS Bundesanstalt für Strahlenschutz
(Federal Office for Radiation Protection Germany)

Participants: Ingo Reiche, Helge Kröger

Code: SCALE4.4a

Library: 238-group ENDF/B-V

Description of computer code and data library: SCALE4.4a is a well known modular code system for performing criticality safety calculations (amongst others). We used the modules CSASI, WAX and KENO-VI. Multiple calls of CSASI provide resonance-corrected macroscopic mixture cross-section libraries for the fuel rods in the different axial zones by sequentially activating the functional modules BONAMI, NITAWL-II, and ICE. These mixture cross-section libraries are combined by WAX. Then the module KENO-VI is called for calculating k_{eff} of the system using the Monte Carlo method.

The 238-group ENDF/B-V library contains data for all nuclides available in ENDF/B-V, and also some data from ENDF/B-VI.

Documentation: p2e_results_bfs44a.xls

Country: **Germany**
Institute: BfS Bundesanstalt für Strahlenschutz
(Federal Office for Radiation Protection Germany)
Participants: Helge Kröger, Ingo Reiche
Code: SCALE 5.0
Library: 238-group ENDF/B-V
Description of computer code and data library: SCALE 5.0 is a well known modular code system for performing criticality safety calculations (amongst others). We used the modules CSASI, WAX and KENO-VI. Multiple calls of CSASI provide resonance-corrected macroscopic mixture cross-section libraries for the fuel rods in the different axial zones by sequentially activating the functional modules BONAMI, NITAWL-II, and ICE. These mixture cross-section libraries are combined by WAX. Then the module KENO-VI is called for calculating k_{eff} of the system using the Monte Carlo method.
The 238-group ENDF/B-V library contains data for all nuclides available in ENDF/B-V, and also some data from ENDF/B-VI.
Documentation: p2e_results_bfs50.xls

Country: **Japan**
Institute: JNES Japan Nuclear Energy Safety Organization
Participants: Tetsuo Nakata
Results from this contributor are presented in Appendix V
Documentation: p2e_results_nakata-bu30.xls, p2e_results_nakata-bu50.xls

Country: **United Kingdom**
Company: Serco Group plc.
Participants: Malcolm Armishaw
Code: MONK Version 9A_RU1
Library: DICE nuclear data library based on JEF2.2
Documentation: p2e_results_serco_armishaw.xls

Country: **United States**
Institute: ORNL Oak Ridge National Laboratory
Participants: Thomas M. Miller
Code: SCALE 5.1 – KENO V.a
Library: 238-group ENDF/B-VI.7 (v6-238)
Description of computer code and data library: The eigenvalue calculations were performed using the CSAS25 sequence of SCALE 5.1, which, by default, automatically creates multigroup cross-sections using BONAMI, CENTRM, and PMC and performs the eigenvalue calculation with KENO Va. BONAMI applies the Bondarenko resonance self-shield method to process the cross-sections in the unresolved energy range for nuclides that have Bondarenko data. Next, CENTRM is used to calculate pointwise continuous fluxes for the unit cell geometries. The fluxes calculated by CENTRM,

along with the pointwise continuous cross-sections used by CENTRM, are then used by PMC to create the problem specific multigroup cross section library that will be used by KENO Va, which is a multigroup 3D Monte Carlo criticality code. A P_5 scattering approximation was used, and no nuclides were substituted or omitted from the calculations. The statistical error of the eigenvalue results were typically about 0.00007 for the 68% confidence interval. Each calculation simulated 10300 generations with 10000 neutrons per generation, and the first 300 generations were skipped to allow for source convergence.

Documentation: p2e_results_ornl.xls

Country: United States

Institute: ORNL Oak Ridge National Laboratory

Participants: Thomas M. Miller

Code: MCNP5 Release 1.40

Library: ENDF/B-VI.6 (zzaaa.66c) – substitutions listed below

Description of computer code and data library: The eigenvalue calculations were performed using MCNP Version 5 Release 1.40. The cross-sections used were a subset of the pointwise continuous energy cross-sections provided with the code by the developers. No nuclides were omitted from calculations, and all nuclides used the ENDF/B-VI.6 (zzaaa.66c) library except for the following substitutions:

Mo-95 ENDF/B-V.0 KIDMAN (zzaaa.50c)
Ru-101 ENDF/B-V.0 KIDMAN (zzaaa.50c)
Nd-143 ENDF/B-V.0 KIDMAN (zzaaa.50c)
Nd-145 ENDF/B-V.0 KIDMAN (zzaaa.50c)
Sm-150 ENDF/B-VI.0 URSEA (zzaaa.49c)
Sm-151 ENDF/B-V.0 KIDMAN (zzaaa.50c)
Sm-152 ENDF/B-VI.0 URSEA (zzaaa.49c)

The s(α,β) treatment was used for hydrogen bound in water, lwtr.60t. The statistical error of the eigenvalue results were typically about 0.00007 for the 68% confidence interval. Each calculation simulated 10300 generations with 10000 neutrons per generation, and the first 300 generations were skipped to allow for source convergence.

Documentation: p2e_results_ornl.xls

Appendix V
“Phase II-E Benchmark” calculation results

Tetsuo NAKATA

Fuel Cycle Facility Safety Analysis Group,
Safety Analysis and Evaluation Division,
Japan Nuclear Energy Safety Organization (JNES)

1. Results

The neutron multiplication factors (k_{eff}) of cask configuration with CR insertion depths for the Task 1 and Task 2 were summarised in Table 1 through Table 4 in the attached files.
And also the isotopic inventories used for these calculations were summarised in the attached files.

2. Analysis environments

Institute: Japan Nuclear Energy Safety Organization, JNES, Japan
Participants: Tetsuo Nakata
Neutron data library: JENDL-3.3
Neutron data processing code: ART [1] is used to make temperature dependent libraries.
Neutron energy group: Continuous energy.
Description of code system: MVP-ORBURN (v1.5) is an integrated burn-up code system composed of the continuous energy group Monte Carlo code, MVP II [2] and the burn-up calculation code ORIGEN2.2 [3]. In MVP-ORBURN, the effective cross-sections depending on burnup level are evaluated by the MVP II code at every time step and every axial node (maximum 20) through the neutron flux distribution in a fuel assembly and the neutron energy spectrum.
Burn-up calculations are performed by the ORIGEN 2.2 code. Therefore burn-up chain and branching ratio data are based on the ORIGEN 2.2 code.
Geometry modelling: The 3D model of fuel assembly for MVP II is divided into 20 nodes of BU regions axially, and radially the same model as specified in the benchmark problem specifications. Burn-up calculation is conducted 0D model by the ORIGEN 2.2 code.
Omitted nuclide: In the MVP II spatial calculation, it is limited to a maximum of 50 nuclides included in a library.
Employed convergence limit: None.
Other information: None.
Computational condition: Personal computer, CPU “Pentium-4, 3.2GHz”, OS “Windows-XP SP2.”Burn-up step: It was divided by 20 steps of same time width for average burn-up of 30GWd/t and 50GWd/t. Burn-up calculation is conducted three dimensionally with keeping the axial profile of the target burn-up values for each node.
Neutron history: 20000-30000 histories/cycle, 55cycle, 5cycle skip.

References

[1] Mori, T. et al., Proc. Int. Conf. On Mathematics and Computation (M&C’99), Madrid, Vol.2, p987(1999).
[2] Nagaya, Y., K. Okumura, T. Mori, M. Nakagawa (2005), “MVP/GMVPII: General Purpose Monte Carlo Codes for Neutron and Photon Transport Calculations based on Continuous Energy and Multigroup Methods”, JAERI 1348.
[3] Croff, A.G. (1981) “ORIGEN2 Code Package CCC-371,” Informal Notes.

K_{eff} of the Phase II–E cask configuration at 30 MWd/kg

Table 1. K_{eff} with two bounding axial burn-up profiles

Case No	CR insertion depth (cm)	Keff	
1	0.00	0.92716	±0.00107
2	5.22	0.92612	±0.00101
3	10.45	0.92683	±0.00106
4	15.67	0.92913	±0.00116
5	20.90	0.93029	±0.00135
6	26.12	0.93937	±0.00124
7	31.35	0.93772	±0.00136
8	36.57	0.94572	±0.00115
9	41.80	0.94374	±0.00135
10	52.25	0.95035	±0.00169
11	62.70	0.95313	±0.00143
12	73.15	0.95452	±0.00148
13	94.05	0.96160	±0.00123
14	365.76	0.97047	±0.00088

Table 2. K_{eff} with the axial uniform burn-up profiles

Case No	CR insertion depth (cm)	Keff	
1	0.00	0.92243	±0.00092
2	5.22	0.92149	±0.00098
3	10.45	0.92245	±0.00080
4	15.67	0.92303	±0.00101
5	20.90	0.91887	±0.00096
6	26.12	0.92274	±0.00097
7	31.35	0.92412	±0.00078
8	36.57	0.92570	±0.00090
9	41.80	0.92735	±0.00083
10	52.25	0.93364	±0.00080
11	62.70	0.93573	±0.00096
12	73.15	0.94331	±0.00112
13	94.05	0.95113	±0.00109
14	365.76	0.97323	±0.00101

K_{eff} of the Phase II–E cask configuration at 50 MWd/kg

Table 3. K_{eff} with the two bounding axial burn-up profiles

Case No	CR insertion depth (cm)	Keff	
1	0.00	0.82791	±0.00138
2	5.22	0.83392	±0.00160
3	10.45	0.83807	±0.00144
4	15.67	0.84824	±0.00168
5	20.90	0.85393	±0.00198
6	26.12	0.86296	±0.00162
7	31.35	0.86489	±0.00168
8	36.57	0.87849	±0.00174
9	41.80	0.86756	±0.00165
10	52.25	0.88712	±0.00159
11	62.70	0.89171	±0.00171
12	73.15	0.88393	±0.00157
13	94.05	0.90452	±0.00171
14	365.76	0.90350	±0.00096

Table 4. K_{eff} with the axial uniform burn-up profiles

Case No	CR insertion depth (cm)	Keff	
1	0.00	0.80210	±0.00076
2	5.22	0.80099	±0.00082
3	10.45	0.80349	±0.00080
4	15.67	0.80383	±0.00084
5	20.90	0.80424	±0.00081
6	26.12	0.81082	±0.00076
7	31.35	0.82003	±0.00092
8	36.57	0.83074	±0.00117
9	41.80	0.83517	±0.00116
10	52.25	0.85037	±0.00110
11	62.70	0.86410	±0.00135
12	73.15	0.86930	±0.00135
13	94.05	0.88142	±0.00134
14	365.76	0.90575	±0.00082

Figure 1. K_{eff} with CR insertion depth