FGR-13 QUALITY ASSURANCE EFFORTS

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Introduction

This document briefly summarizes some of the quality assurance efforts undertaken with respect to the computation of the cancer risk coefficients of Federal Guidance Report 13. The coefficients were derived using the DCAL System software developed by ORNL for the Environmental Protection Agency. DCAL is an integration on personal computers of the dosimetric software and numerical data bases developed at ORNL over the past twenty years. The system has been one of three computer codes used to produce the dosimetric data in recent publications of the International Commission on Radiological Protection (ICRP) and hence its dosimetric aspects have been subject to considerable QA efforts. This report begins with a brief reflection on the QA aspects included in the design of the DCAL System and those followed in assembling the numerous data files that reside within the system. Following that discussion some numerical examples are presented, and the report concludes with a detailed comparison of dosimetric and risk coefficients derived in various manners.

The DCAL System

DCAL is a software system for the computation of dose and risk coefficients associated with the intake of and exposure to radionuclides. The system makes extensive use of data files to limit the amount of information the user must provide, thus reducing the potential for input errors. All data files have been subjected to extensive review and verification not only by the authors but also by others who have used various modules (e.g., SEECAL) and associated data files (e.g., nuclear decay data). To reduce the occurrence of "user errors," the system was designed in a manner that minimizes the amount of information to be provided by the user. For example, information on the half-lives of the radionuclides, the identity of radioactive decay products (possible decay chains), the masses of organs, etc. is provided by the system. All such files are constructed so that they can be "read" and, in many instances, the DCAL System contains utility routines to facilitate the resolution of any questions or issues regarding the validity of data elements. Where possible, the system includes graphical presentation of the data and the results of the computation to enable visual confirmation. These features are necessary, but of course are not sufficient, to ensure quality.

A schematic of the DCAL System is shown in Fig. 1. The software runs within a DOS "box" provided by Windows 95/98/NT operating systems. The numerical calculations are carried out within the modules shown as rectangles. These modules are written in FORTRAN. A BASIC module provides the interactive driver for the FORTRAN modules. The system can be operated in both the interactive and batch mode.

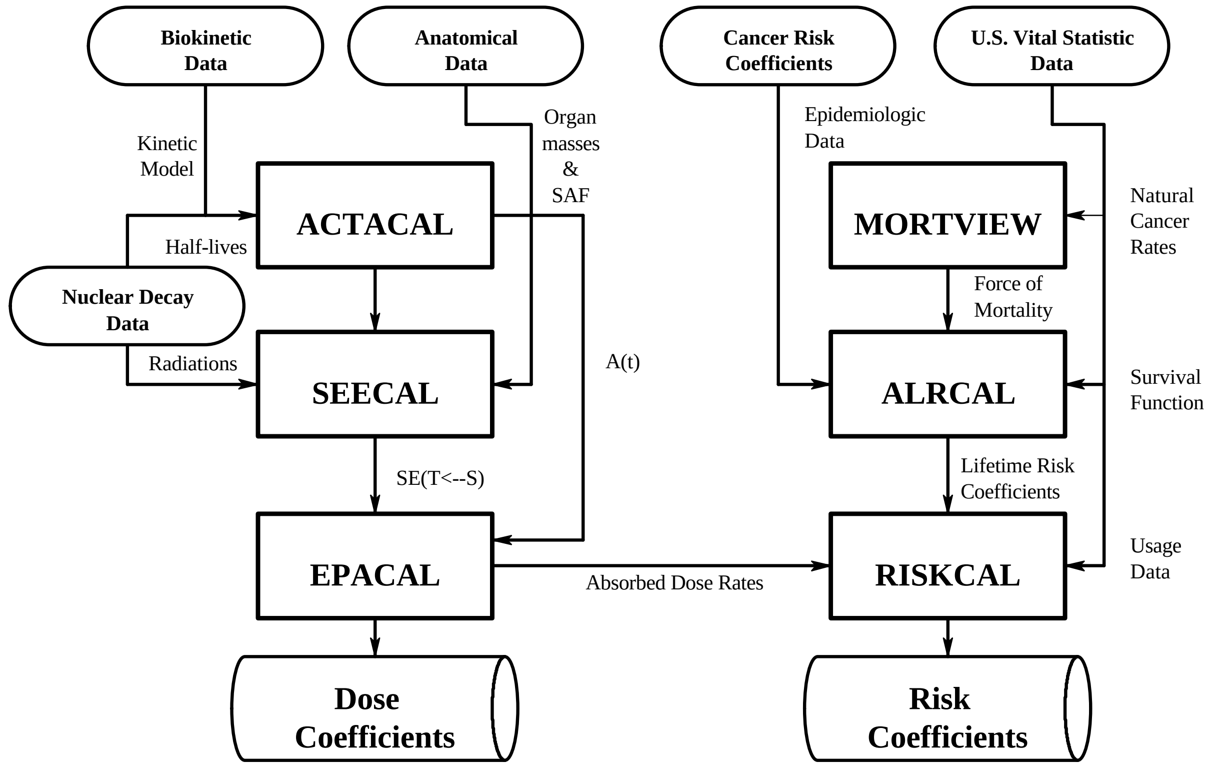

Fig. 1 Schematic of the DCAL System used in production of FGR-13.

DCAL's Biokinetic Module

A detailed description of DCAL's numerical solver for the biokinetic models (i.e., the system of differential equations characterizing the biokinetic behavior) has been described by Leggett *et al.* (1993). This solver has been used at ORNL for more than 10 years and has been subjected to hundreds of checks against other solvers. The ORNL solver was selected because of its numerical simplicity and its ability to handle the large systems of differential equations encountered in internal dosimetry. For example, more than 600 simultaneous differential equations are involved in addressing the inhalation of Th-232 as Type S material when each decay product is assigned independent kinetics.

Example 1. This example illustrates the type of comparisons that have been made between the DCAL solver and other solvers with regard to solving models with time-varying parameter values. In this example, a comparison is made with a modification of a method developed by A. Birchall (1989). The model considered is the ICRP's age-specific biokinetic model for americium as published by Leggett (1992). It is assumed that americium is injected into blood at age 1 y and that there is no radiological decay. The modification of the Birchall method was necessary to consider changes with age in the biokinetics. Results of the comparison are tabulated below.

	Time After Injection (d)	Contents (Fraction of Injected Americium)				
		Liver	**Skeleton**	**Gonads**	**Urine**	**Feces**
DCAL	1	0.08777	0.6149	2.262E-5	0.06296	0.004342
modified Birchall		0.08778	0.6150	2.263E-5	0.06297	0.004344
DCAL	10	0.09942	0.7071	2.590E-5	0.08316	0.01309
modified Birchall		0.09942	0.7072	2.590E-5	0.08316	0.01309
DCAL	100	0.09583	0.7353	2.754E-5	0.1016	0.01517
modified Birchall		0.09586	0.7356	2.755E-5	0.1016	0.01517
DCAL	1000	0.1379	0.5330	4.580E-5	0.2255	0.03816
modified Birchall		0.1383	0.5346	4.595E-5	0.2262	0.03828
DCAL	10,000	0.02621	0.1949	7.651E-5	0.5506	0.1174
modified Birchall		0.02610	0.1958	7.650E-5	0.5528	0.1180

Example 2. As a second example of the types of checks to which the DCAL solver has been subjected, we consider a case in which there is ingrowth of radioactive progeny in the body. Lee and coworkers (1997) have published a biokinetic model for ^{232}Th and radioactive progeny in adults. The model assumes independent kinetics of ^{228}Ra produced by decay of ^{232}Th in the body. As a check of the DCAL solver, four different methods were used to solve for the integrated activities of ^{232}Th and ^{228}Ra in the main compartments of the Lee model: (1) DCAL; (2) derivation of analytical solutions using the computer software for eigen-system analysis (Killough and Eckerman, 1984); (3) a computer algorithm based on a simplification of the eigen-analysis method (Birchall and James, 1989); and (4) Laplace transforms (as solved by Lee and coworkers). Methods 2 - 4 are virtually exact methods, but are slow and cumbersome to use and for practical purposes are limited in their applicability to age-independent models with relatively small numbers of compartments. In the following table, results are rounded to three digits. Before rounding, the differences in solutions by the four methods were less than 0.3% in all cases.

Compartment	DCAL	DIFSOL	Birchall	Lee *et al.*
blood, ^{232}Th	5.32E5	5.33E5	5.33E5	5.33E5
bone surf, ^{232}Th	4.10E8	4.11E8	4.11E8	4.11E8
liver, ^{232}Th	3.21E7	3.21E7	3.21E7	3.21E7
soft tissue, ^{232}Th	1.28E8	1.29E8	1.29E8	1.29E8
blood, ^{228}Ra	5.00E3	5.01E3	5.01E3	5.0103
soft tissue, ^{228}Ra	6.04E5	6.05E5	6.05E5	6.05E5
liver, ^{228}Ra	8.12E4	8.12E4	8.12E4	8.12E4
GI tract, ^{228}Ra	2.06E5	2.07E5	2.07E5	2.07E5
bone surf, ^{228}Ra	7.880E5	7.90E5	7.90E5	7.90E5
ST[a] trab, ^{228}Ra	1.38E6	1.38E6	1.38E6	1.38E6
LT[a] trab, ^{228}Ra	2.03E5	2.03E5	2.03E5	2.03E5
ST cort, ^{228}Ra	7.21E5	7.23E5	7.23E5	7.23E5
LT cort, ^{228}Ra	1.48E6	1.48E6	1.48E6	1.48E6

[a] ST = short-term, LT = long-term

Dosimetric Module

Within DCAL the dosimetric aspects of internal emitters are embodied in the SEECAL module, which has been described in an ORNL/TM report (Cristy and Eckerman 1993). The current version of SEECAL within the DCAL System directly accesses the nuclear decay data files. SEECAL uses the full set of nuclear decay data, including the beta spectra, and not just the abridged tabulations given in ICRP Publication 38 (ICRP 1983). The nuclear decay data files have been documented in an ORNL/TM report (Eckerman *et al.* 1993) and a *Health Physics* paper (Eckerman *et al.* 1994). The results of hand calculations are compared below with the SEECAL's output for some radonuclides having relatively simple emissions. The relevant formulation is

$$SE(T \Leftarrow S) = \frac{1.602\ \ 10^{-13}}{M_T} \sum_i y_i\ E_i\ AF(T \Leftarrow S)$$

where y_i is the number of radiation i of unique or average energy E_i(MeV) emitted per nuclear transformation of the radionuclide, and $AF(T \Leftarrow S)_i$ is the fraction in energy of radiation i emitted in S that is absorbed in target tissue T of mass M_T (kg). The constant $1.602 \;\; 10^{-13}$ is the number of joules per MeV. Using the above units for energy and mass, the units of *SE* are Gy per Bq s.

Example 3. Po-210 emits an alpha particle of kinetic energy 5.297 MeV. Compute the SE for bone surface (*BS*) assuming Po is distributed either on the surface or within the volume of cortical bone (CB) and trabecular bone (TB). The mass of bone surface is 0.12 kg. Also compute the SE for self dose of the liver (mass 1.8 kg). The absorbed fraction in the liver, $AF(Liver \Leftrightarrow Liver)$, is one. The relevant AFs for bone surface are:

$AF(BS \Leftarrow CB)_\mathrm{V} = 0.01$ $\qquad$ $AF(BS \Leftarrow TB)_\mathrm{V} = 0.025$
$AF(BS \Leftarrow CB)_\mathrm{S} = 0.25$ $\qquad$ $AF(BS \Leftarrow TB)_\mathrm{S} = 0.25.$

From the above we have:

$$SE(BS \Leftarrow CB)_S \;=\; SE(BS \Leftarrow TB)_S \;=\; \frac{1.6023 \;\; 10^{-13} \;\; 5.297 \;\; 0.25}{0.12}$$

$$= \; 1.768 \;\; 10^{-12} \;\; Gy/nt$$

$$SE(BS \Leftarrow CB)_V \;=\; \frac{1.6023 \; 10^{-13} \;\; 5.297 \;\; 0.01}{0.12}$$

$$= \; 7.072 \;\; 10^{-12} \;\; Gy/nt$$

$$SE(BS \Leftarrow TB)_V \;=\; \frac{1.6023 \; 10^{-13} \;\; 5.297 \;\; 0.025}{0.12}$$

$$= \; 1.768 \;\; 10^{-13} \;\; Gy/nt$$

The 5.297 MeV noted above is the kinetic energy of the alpha particle. The nuclei formed in the alpha decay process shares the available energy by its recoil. The mass of the recoiling nuclei is 4 mass units less than the parent nuclei since the alpha particle is the He nucleus. The recoil energy is assumed to be absorbed in the bone mineral and not available to irradiate bone surface. However, for self-dose the recoiling nucleus is considered. The total kinetic energy *T* available for absorption is given by:

$$T = \left(1 + \frac{M_\alpha}{A - 4}\right) E_\alpha$$

where M_α is the mass of the alpha particle (4.0026 amu), E_α is the kinetic energy of the alpha particle, and A is the atomic number of the parent nuclei. The SE for self dose of the liver is thus

$$SE(Liver \Leftarrow Liver) = \frac{1.6023\ 10^{-13} \left(1 + \frac{4.0026}{206}\right)\ 5.297\ \ 1.0}{1.8}$$

$$= 4.806\ \ 10^{-13}\ Gy/nt$$

The above numerical values correspond exactly to the Po-210 SEs computed by SEECAL. Many other example calculations have been carried out. DCAL provides the user with access to all the numerical values used by SEECAL in calculating SE, thus enabling the user to verify SEECAL's values at any time.

Lung Model Formulation

Often the implementation of submodels in DCAL is verified by formulating special calculations. For example, the implementation of the ICRP lung model (ICRP 1994) can be verified by examining the total amount of inhaled material absorbed directly from the lung and that entering the gastrointestinal tract. The lung model is shown in schematic form in Fig. 2.

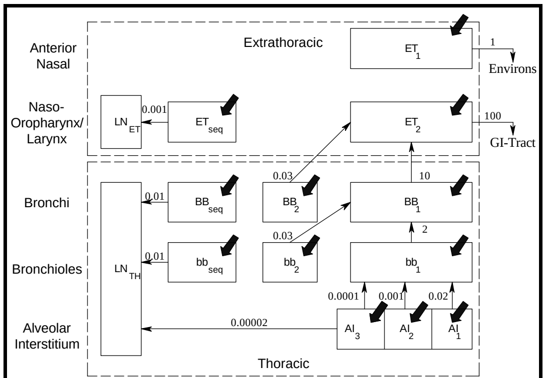

Fig. 2. Structure of the ICRP's respiratory tract model.

Consider Type F materials which are characterized by fast absorption; the absorption rate, λ_a, is 100 d^{-1} from all compartments except ET_1. No absorption occurs from ET_1. The bold arrows in Fig. 2 denote the sites (compartments) into which inhaled materials are deposited, and the thin arrows denote the routes of mechanical clearance of particles. The numerical values are the mechanical clearance rates, λ_m(d^{-1}). The fractional absorption to blood from a compartment is $\lambda_a / (\lambda_a + \lambda_m)$. The fraction transferred to the receiving compartment is, of course, 1 minus the fractional absorption, or $\lambda_m / (\lambda_a + \lambda_m)$. For all compartments except ET_2 and BB_1, the mechanical removal rates are insignificant relative to the absorption rate; that is, $\lambda_a / (\lambda_a + \lambda_m) \approx 1$.

For the reference worker (aerosol AMAD of 5 μm) the deposition in the AI region is 5.319% and that in the bb region is 1.103%. These deposits will be absorbed from the lung. The deposition in BB_{seq}

and BB_2 (0.605%) will also be absorbed. A fraction of the material deposited in BB_1 (1.171%) is absorbed from that compartment, (1.171 100) / (100 + 10) or 1.065%, and the remainder [(1.171 10) / (100 + 10)] is transferred to ET_2, where the fraction 100/(100+100) of the transferred material is absorbed; total absorption is thus 0.053%. Absorption of material deposited in ET_2 (39.89%) is (39.89 100) / (100 + 100) or 19.945%. The total absorption is thus 5.319 + 1.103 + 0.605 + 1.065 + 0.053 + 19.945 or 28.09%. Material entering the GI-tract is largely that deposited in ET_2 or transferred to ET_2 from BB_1. Since the transfer rate into the GI-tract is equal to the absorption rate (both 100 d^{-1}) the transfer to the GI-tract is 19.945 + 0.053 or 20%.

DCAL can simulate the above by defining a special biokinetic model where the material in "Blood" is removed to "Excreta" with an extremely small transfer coefficient (e.g., 1.0E-30). This, in effect, results in the "Blood" compartment acting as an integrator. Similarly, changing the transfer coefficient from the stomach to the small intestine in the kinetics of Type F material (ICRP66F.LNG) to an extremely small value results in the "St Cont" acting as an integrator. The results calculated by DCAL (by the ACTACAL module) are in agreement with the above values. The DCAL's results for all absorption Types are:

Fate of Inhaled Activity in Reference Worker
(AMAD = 5 µm)

Type	To Blood (%)[a]	To GI-Tract (%)[a]
F	28.1	20.0
M	6.1	42.0
S	0.6	47.5

[a] Percent of inhaled activity in absence of decay.

Checks on External Dose Estimates

Extensive QA efforts were undertaken during the calculations of the external dose coefficients that were published in FGR-12. As discussed in Chapter 2 of FGR-12, extensive comparisons were made with published works, including ICRP Publication 53. In addition, various investigators were contacted to resolve any remaining numerical differences. These investigators were included among the external reviewers of FGR-12. The computations of the cancer risk coefficients in FGR-13 directly accesses external dose coefficient files generated during the preparation of FGR-12. That is, no new calculations of external doses are undertaken in FGR-13.

Checks on Internal Dose Estimates

1. A large number of comparisons of integrated doses have been made by the ICRP dose calculation task group (DOCAL) using three unrelated computer codes.

2. As a further check, effective dose coefficients for acute exposure were generated for all radionuclides considered in the internal exposure scenarios and were compared with coefficients from the ICRP Dose Coefficient CD-ROM. Some of these coefficients were derived using the DCAL System but most were derived by the NRPB using a considerably different method of solution. Effective dose coefficients were generated and checked for each of the six ages at exposure considered by the ICRP: infant (100 d), 1 y, 5 y, 10 y, 15 y, and mature adult (age 20 y or 25 y, depending on the definition of mature adult in the specific biokinetic model applied). These results for inhalation intakes are shown graphically in Figs 3-6 and for ingestion in Figs 7-10.

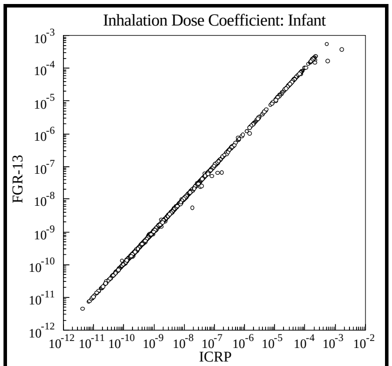

Fig. 3. Comparison of effective dose coefficients for inhalation intakes by an infant.

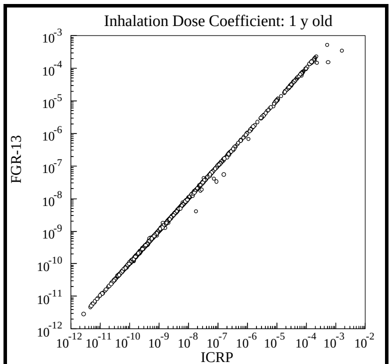

Fig. 4. Comparison of effective dose coefficients for inhalation intakes by a 1 y old.

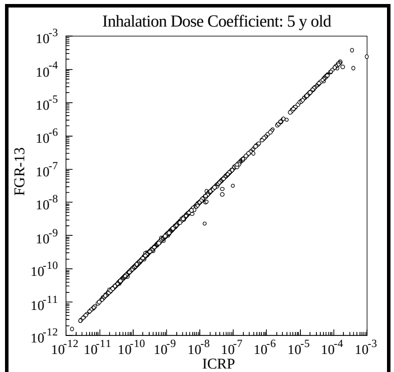

Fig. 5. Comparison of effective dose coefficients for inhalation intakes by a 5 y old.

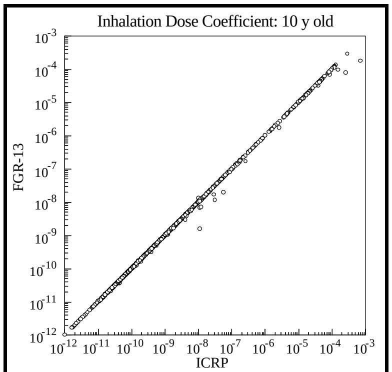

Fig.6. Comparison of effective dose coefficients for inhalation intakes by a 10 y old.

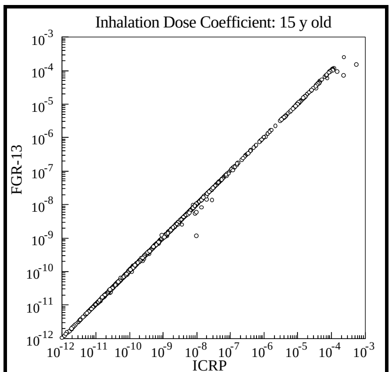

Fig. 7. Comparison of effective dose coefficients for inhalation intakes by a 15 y old.

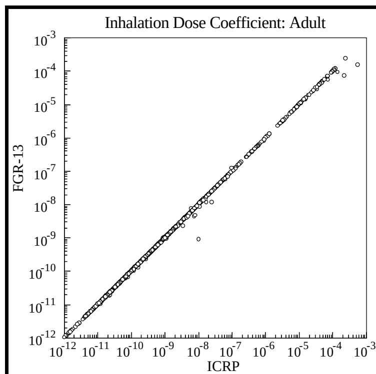

Fig. 8. Comparison of effective dose coefficients for inhalation intakes by an adult.

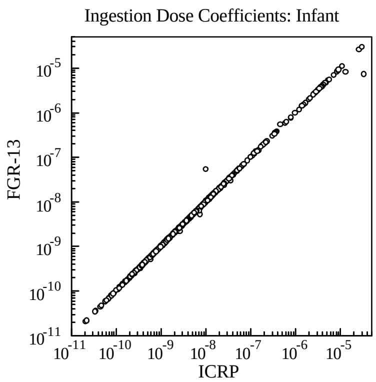

Fig. 9. Comparison of effective dose coefficients for ingestion intakes by an infant.

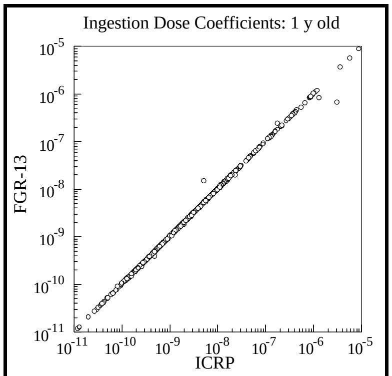

Fig.10. Comparison of effective dose coefficients for ingestion intakes by a 1 y old.

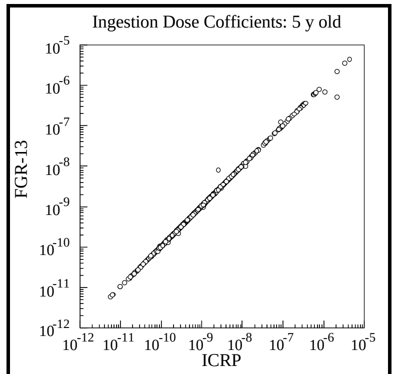

Fig.11. Comparison of effective dose coefficients for ingestion intakes by a 5 y old.

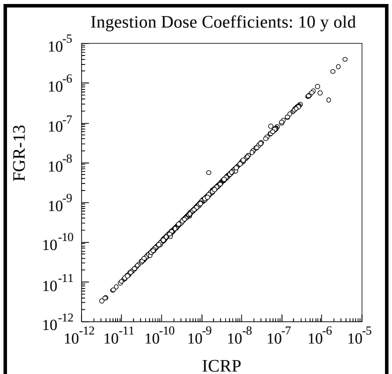

Fig.12. Comparison of effective dose coefficients for ingestion intakes by a 10 y old.

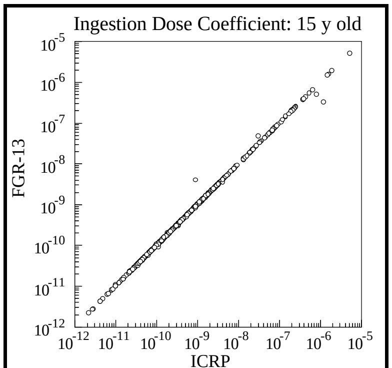

Fig.13. Comparison of effective dose coefficients for ingestion intakes by a 15 y old.

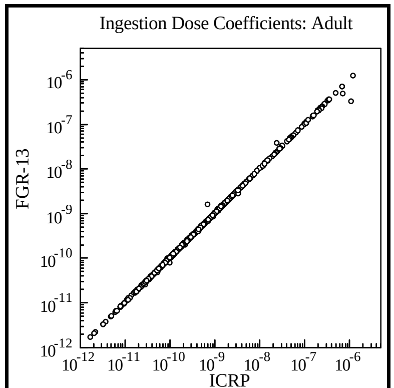

Fig.14. Comparison of effective dose coefficients for ingestion intakes by an adult.

Tabulated in Appendix A are comparisons of committed effective dose coefficients published by the ICRP with values computed during the preparation of FGR-13. Comparisons are made for each of the six ages of acute intake considered in the FGR-13 calculations. Comparisons are marked “ok” if the difference is less than 5%. In many cases it is not possible to make more precise comparisons with the values published by the ICRP because the latter are rounded to two significant digits.

Checks on External Risk Coefficients

Table 6.2 of the Federal Guidance Report No. 13 draft document provides age-averaged site-specific cancer mortality risk estimates (cancer deaths per person-Gy) from low-LET uniform irradiation of the body. This table was generated by C. B. Nelson at EPA, using a computer code other than

DCAL and subsequently verified by DCAL's calculations. Because the external dose rates used in the external exposure scenarios are assumed to be independent of age and time, the external risk coefficients given in the Federal Guidance Report No. 13 draft document should be the same as the $\sum_i d_i r_i$, where d_i is the age- and time-independent external dose rate for cancer site *i* and r_i is the mortality risk estimate given in Table 6.2 for site *i*. Comparison of an external risk coefficient generated by DCAL with this sum provides a useful check on the DCAL-generated coefficient, because the latter is calculated in the considerably more detailed fashion described in the draft document, i.e., by calculating radiogenic risk on a year-by-year basis following the dose and considering the likelihood of death from competing causes during each year based on the U.S. life table. The results of this comparison are shown graphically in Fig 15-17 and listed in Appendix B.

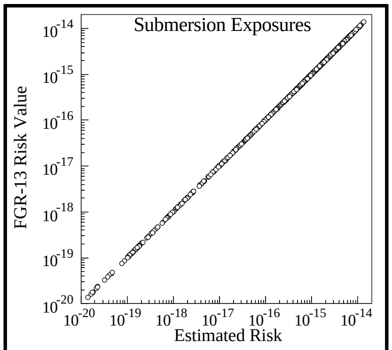

Fig. 15. Check of submersion risk coefficients.

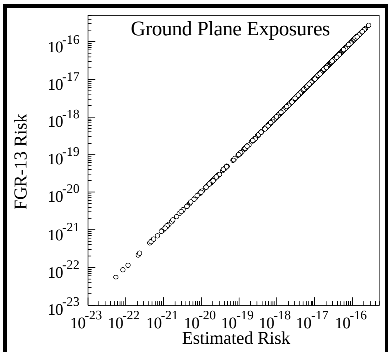

Fig. 16. Check of ground plane risk coefficients.

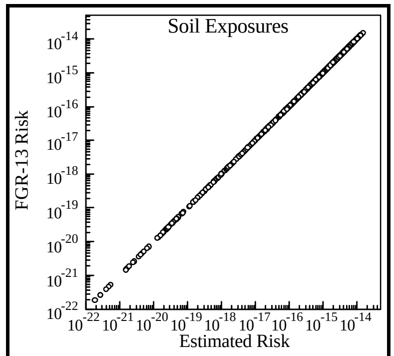

Fig. 17. Check of soil (volume source) risk coefficients.

Checks on Internal Risk Coefficients

Table 6.2 of the draft FGR-13 cannot be used to check the risk coefficients for internal exposures in a precise way because the internal doses are not constant with time and are not independent of age. However, for radionuclides whose doses are delivered over a relatively short time following acute intake, a check similar to that described above for the external risk module can be made for the internal risk module of DCAL by considering the simpler situation in which the usage of environmental media as well as the biokinetics and internal dosimetry are independent of age (use the dose estimates for the adult). Results of such comparisons will be tabulated in the final QA report for several radionuclides with relatively short retention times and/or radiological half-lives. Results of a few such comparisons are summarized below.

Example 4. Ingestion of organically bound tritium by the adult results in a dose of about 4.2 x 10^{-11} Gy/Bq to all tissues. Although H-3 is not a short-lived radionuclide, it is retained only briefly in the body. From Table 6.2 the age-averaged total cancer mortality risk estimate is 5.75% per Gy. Thus, an estimate of the risk is 4.2 x 10^{-11} x 5.75 x 10^{-2} or 2.4 x 10^{-12} Bq^{-1}. Table 7.2a of the draft of FGR-13 indicates values of 2.09 and 2.66 x 10^{-12} for water and diet, respectively.

Example 5. Inhalation of tritiated water vapor by the adult results in a dose of about 1.8 x 10^{-11}

Gy/Bq to all tissues. Thus, the inhalation risks are estimated to be 1.8 x 10^{-11} x 5.75 x 10^{-2} or 1.0 x 10^{-12} Bq^{-1}. FGR-13's Table 7.2a gives a value of 1.04 x 10^{-12} Bq^{-1}.

Example 6. From Table 6.2, the age-averaged thyroid cancer mortality estimate is 3.24 x 10^{-4} Gy^{-1}. For ingestion of ^{132}I by the adult, the thyroid absorbed dose coefficient is 5.4 x 10^{-9} Gy/Bq. The estimated thyroid cancer risk for ^{132}I is thus 5.4 x 10^{-9} x 3.24 x 10^{-4} or 1.7 x 10^{-12} Bq^{-1}. Comparison cannot be made directly with the tabulated risk coefficient in Table 7.2a in this case because much of the decay of the short-lived ^{132}I occurs outside the thyroid; for example, Table 7.2a indicates that stomach cancer rather than thyroid cancer is the highest contributor (38.1%) to the risk coefficient of 6.87 x 10^{-12} for ingestion of water. The thyroid cancer risk estimates for ^{132}I in the detailed CD-ROM tables are 2.30 and 2.97 x 10^{-12} Bq^{-1} for water and diet, respectively, compared with the crude estimate of 1.7 x 10^{-12} Bq^{-1}.

Example 7. For ingestion of ^{131}I by the adult, the thyroid absorbed dose coefficient is 4.3 x 10^{-7} Gy/Bq. From Table 6.2, the age-averaged thyroid cancer mortality estimate is 3.24 x 10^{-4} Gy^{-1}. Therefore, the estimated thyroid cancer risk for ^{131}I is 4.3 x 10^{-7} x 3.24 x 10^{-4} / 1.5 or 9.3 x 10^{-11} Bq^{-1}; note that 1.5 is the additional dose rate reduction factor applied to long-lived radioiodines. The total mortality for water intakes of ^{131}I listed in Table 7.2a is 1.31 x 10^{-10} Bq^{-1} with thyroid cancer being the highest contributor to the risk (93.2%). The thyroid cancer risk coefficient is 1.22 x 10^{-10} Bq^{-1} for water intakes. For dietary intakes the total mortality listed in Table 7.2a is 1.85 x 10^{-10} Bq^{-1} with thyroid cancer being the highest contributor to the risk (93.7%); thus, the thyroid cancer risk coefficient is 1.73 x 10^{-10} Bq^{-1}.

Further checks can be carried out for the following radionuclides:

		Dose Coefficient (Sv/Bq)	
Nuclide	**Tissue**	**Ingestion**	**Inhalation**
Cs-137	All	1.3E-08	F: 4.6E-09
Tc-99m	Colon	6.6E-11	
Tc-99m	Stomach		F: 2.1E-11
I-135	Thyroid	6.0E-11	V: 1.5E-08
			F: 5.7E-09

More detailed checking is possible for other radionuclides, but it can be best carried out by writing small computer programs to read the ALR and dose rate files. Such checking has being pursued at ORNL.

References

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Appendix A

Comparison of Effective Dose Coefficients

Comparison of age-specific effective dose coefficients for ingestion generated during FGR-13 computations (for QA purposes only) with values published by the ICRP. Comparisons marked with an "ok" differ by less than 5% while those marked by "-->" differ by greater than 5%. Comparisons involving different f1s are enclosed in the bracket "<<<<".

			FGR-13		ICRP	
		Age	f1	e(Sv/Bq)	f1	e(Sv/Bq)
ok	H-3	1	1.00000	1.186E-10	1.00000	1.200E-10
ok	H-3	2	1.00000	1.180E-10	1.00000	1.200E-10
ok	H-3	3	1.00000	7.265E-11	1.00000	7.200E-11
ok	H-3	4	1.00000	5.692E-11	1.00000	5.700E-11
ok	H-3	5	1.00000	4.170E-11	1.00000	4.200E-11
ok	H-3	6	1.00000	4.192E-11	1.00000	4.200E-11
ok	C-14	1	1.00000	1.435E-09	1.00000	1.400E-09
ok	C-14	2	1.00000	1.614E-09	1.00000	1.600E-09
ok	C-14	3	1.00000	9.953E-10	1.00000	9.900E-10
ok	C-14	4	1.00000	8.002E-10	1.00000	8.000E-10
ok	C-14	5	1.00000	5.761E-10	1.00000	5.700E-10
ok	C-14	6	1.00000	5.805E-10	1.00000	5.800E-10
ok	S-35	1	1.00000	1.274E-09	1.00000	1.300E-09
ok	S-35	2	1.00000	8.667E-10	1.00000	8.700E-10
ok	S-35	3	1.00000	4.437E-10	1.00000	4.400E-10
ok	S-35	4	1.00000	2.683E-10	1.00000	2.700E-10
ok	S-35	5	1.00000	1.627E-10	1.00000	1.600E-10
ok	S-35	6	1.00000	1.315E-10	1.00000	1.300E-10
ok	Ca-45	1	0.60000	1.121E-08	0.60000	1.100E-08
ok	Ca-45	2	0.40000	4.894E-09	0.40000	4.900E-09
ok	Ca-45	3	0.40000	2.571E-09	0.40000	2.600E-09
ok	Ca-45	4	0.40000	1.818E-09	0.40000	1.800E-09
ok	Ca-45	5	0.40000	1.313E-09	0.40000	1.300E-09
ok	Ca-45	6	0.30000	7.101E-10	0.30000	7.100E-10
ok	Ca-47	1	0.60000	1.271E-08	0.60000	1.300E-08
ok	Ca-47	2	0.40000	9.373E-09	0.40000	9.300E-09
ok	Ca-47	3	0.40000	4.898E-09	0.40000	4.900E-09
ok	Ca-47	4	0.40000	3.014E-09	0.40000	3.000E-09
ok	Ca-47	5	0.40000	1.841E-09	0.40000	1.800E-09
ok	Ca-47	6	0.30000	1.582E-09	0.30000	1.600E-09
ok	Sc-47	1	0.00100	6.054E-09	0.00100	6.100E-09
ok	Sc-47	2	0.00010	3.914E-09	0.00010	3.900E-09
ok	Sc-47	3	0.00010	1.974E-09	0.00010	2.000E-09
ok	Sc-47	4	0.00010	1.183E-09	0.00010	1.200E-09
ok	Sc-47	5	0.00010	6.806E-10	0.00010	6.800E-10
ok	Sc-47	6	0.00010	5.465E-10	0.00010	5.400E-10
ok	Fe-55	1	0.60000	7.487E-09	0.60000	7.500E-09
ok	Fe-55	2	0.20000	2.354E-09	0.20000	2.400E-09
ok	Fe-55	3	0.20000	1.744E-09	0.20000	1.700E-09
ok	Fe-55	4	0.20000	1.117E-09	0.20000	1.100E-09
ok	Fe-55	5	0.20000	7.704E-10	0.20000	7.700E-10
ok	Fe-55	6	0.10000	3.312E-10	0.10000	3.300E-10
ok	Fe-59	1	0.60000	3.931E-08	0.60000	3.900E-08
ok	Fe-59	2	0.20000	1.290E-08	0.20000	1.300E-08
ok	Fe-59	3	0.20000	7.495E-09	0.20000	7.500E-09
ok	Fe-59	4	0.20000	4.731E-09	0.20000	4.700E-09
ok	Fe-59	5	0.20000	3.071E-09	0.20000	3.100E-09
ok	Fe-59	6	0.10000	1.789E-09	0.10000	1.800E-09
ok	Co-57	1	0.60000	2.861E-09	0.60000	2.900E-09
ok	Co-57	2	0.30000	1.580E-09	0.30000	1.600E-09
ok	Co-57	3	0.30000	8.924E-10	0.30000	8.900E-10
ok	Co-57	4	0.30000	5.781E-10	0.30000	5.800E-10
ok	Co-57	5	0.30000	3.734E-10	0.30000	3.700E-10
ok	Co-57	6	0.10000	2.108E-10	0.10000	2.100E-10
ok	Co-58	1	0.60000	7.350E-09	0.60000	7.300E-09
ok	Co-58	2	0.30000	4.461E-09	0.30000	4.400E-09
ok	Co-58	3	0.30000	2.584E-09	0.30000	2.600E-09
ok	Co-58	4	0.30000	1.697E-09	0.30000	1.700E-09
ok	Co-58	5	0.30000	1.128E-09	0.30000	1.100E-09
ok	Co-58	6	0.10000	7.492E-10	0.10000	7.400E-10
ok	Co-60	1	0.60000	5.425E-08	0.60000	5.400E-08
ok	Co-60	2	0.30000	2.677E-08	0.30000	2.700E-08
ok	Co-60	3	0.30000	1.692E-08	0.30000	1.700E-08
ok	Co-60	4	0.30000	1.116E-08	0.30000	1.100E-08
ok	Co-60	5	0.30000	7.943E-09	0.30000	7.900E-09
ok	Co-60	6	0.10000	3.418E-09	0.10000	3.400E-09
ok	Ni-59	1	0.10000	6.347E-10	0.10000	6.400E-10
ok	Ni-59	2	0.05000	3.426E-10	0.05000	3.400E-10
ok	Ni-59	3	0.05000	1.874E-10	0.05000	1.900E-10
ok	Ni-59	4	0.05000	1.135E-10	0.05000	1.100E-10
ok	Ni-59	5	0.05000	7.265E-11	0.05000	7.300E-11
ok	Ni-59	6	0.05000	6.295E-11	0.05000	6.300E-11
ok	Ni-63	1	0.10000	1.545E-09	0.10000	1.600E-09
ok	Ni-63	2	0.05000	8.355E-10	0.05000	8.400E-10
ok	Ni-63	3	0.05000	4.562E-10	0.05000	4.600E-10
ok	Ni-63	4	0.05000	2.758E-10	0.05000	2.800E-10
ok	Ni-63	5	0.05000	1.758E-10	0.05000	1.800E-10
ok	Ni-63	6	0.05000	1.520E-10	0.05000	1.500E-10
ok	Zn-65	1	1.00000	3.633E-08	1.00000	3.600E-08
ok	Zn-65	2	0.50000	1.570E-08	0.50000	1.600E-08
ok	Zn-65	3	0.50000	9.757E-09	0.50000	9.700E-09
ok	Zn-65	4	0.50000	6.444E-09	0.50000	6.400E-09
ok	Zn-65	5	0.50000	4.527E-09	0.50000	4.500E-09
ok	Zn-65	6	0.50000	3.935E-09	0.50000	3.900E-09
ok	Se-75	1	1.00000	1.974E-08	1.00000	2.000E-08
ok	Se-75	2	0.80000	1.314E-08	0.80000	1.300E-08
ok	Se-75	3	0.80000	8.383E-09	0.80000	8.300E-09
ok	Se-75	4	0.80000	6.060E-09	0.80000	6.000E-09
ok	Se-75	5	0.80000	3.167E-09	0.80000	3.100E-09
ok	Se-75	6	0.80000	2.612E-09	0.80000	2.600E-09
ok	Se-79	1	1.00000	4.061E-08	1.00000	4.100E-08
ok	Se-79	2	0.80000	2.782E-08	0.80000	2.800E-08
ok	Se-79	3	0.80000	1.889E-08	0.80000	1.900E-08
ok	Se-79	4	0.80000	1.362E-08	0.80000	1.400E-08
ok	Se-79	5	0.80000	4.019E-09	0.80000	4.100E-09
ok	Se-79	6	0.80000	2.893E-09	0.80000	2.900E-09
ok	Sr-90	1	0.60000	2.271E-07	0.60000	2.300E-07
ok	Sr-90	2	0.40000	7.240E-08	0.40000	7.300E-08
ok	Sr-90	3	0.40000	4.685E-08	0.40000	4.700E-08
ok	Sr-90	4	0.40000	5.973E-08	0.40000	6.000E-08
ok	Sr-90	5	0.40000	7.892E-08	0.40000	8.000E-08

ok	Sr-90	6	0.30000	2.767E-08	0.30000	2.800E-08
ok	Y-90	1	0.00100	3.127E-08	0.00100	3.100E-08
ok	Y-90	2	0.00010	2.003E-08	0.00010	2.000E-08
ok	Y-90	3	0.00010	9.968E-09	0.00010	1.000E-08
ok	Y-90	4	0.00010	5.904E-09	0.00010	5.900E-09
ok	Y-90	5	0.00010	3.344E-09	0.00010	3.300E-09
ok	Y-90	6	0.00010	2.687E-09	0.00010	2.700E-09
ok	Zr-95	1	0.02000	8.539E-09	0.02000	8.500E-09
ok	Zr-95	2	0.01000	5.659E-09	0.01000	5.600E-09
ok	Zr-95	3	0.01000	3.059E-09	0.01000	3.000E-09
ok	Zr-95	4	0.01000	1.931E-09	0.01000	1.900E-09
ok	Zr-95	5	0.01000	1.195E-09	0.01000	1.200E-09
ok	Zr-95	6	0.01000	9.612E-10	0.01000	9.500E-10
ok	Nb-94	1	0.02000	1.500E-08	0.02000	1.500E-08
ok	Nb-94	2	0.01000	9.766E-09	0.01000	9.700E-09
ok	Nb-94	3	0.01000	5.354E-09	0.01000	5.300E-09
ok	Nb-94	4	0.01000	3.433E-09	0.01000	3.400E-09
ok	Nb-94	5	0.01000	2.164E-09	0.01000	2.100E-09
ok	Nb-94	6	0.01000	1.737E-09	0.01000	1.700E-09
ok	Nb-95m	1	0.02000	6.384E-09	0.02000	6.400E-09
ok	Nb-95m	2	0.01000	4.125E-09	0.01000	4.100E-09
ok	Nb-95m	3	0.01000	2.070E-09	0.01000	2.100E-09
ok	Nb-95m	4	0.01000	1.235E-09	0.01000	1.200E-09
ok	Nb-95m	5	0.01000	7.071E-10	0.01000	7.100E-10
ok	Nb-95m	6	0.01000	5.662E-10	0.01000	5.600E-10
ok	Nb-95	1	0.02000	4.635E-09	0.02000	4.600E-09
ok	Nb-95	2	0.01000	3.202E-09	0.01000	3.200E-09
ok	Nb-95	3	0.01000	1.787E-09	0.01000	1.800E-09
--->	Nb-95	4	0.01000	1.162E-09	0.01000	1.100E-09
ok	Nb-95	5	0.01000	7.438E-10	0.01000	7.400E-10
ok	Nb-95	6	0.01000	5.908E-10	0.01000	5.800E-10
ok	Mo-99	1	1.00000	5.458E-09	1.00000	5.500E-09
ok	Mo-99	2	1.00000	3.493E-09	1.00000	3.500E-09
ok	Mo-99	3	1.00000	1.768E-09	1.00000	1.800E-09
ok	Mo-99	4	1.00000	1.080E-09	1.00000	1.100E-09
ok	Mo-99	5	1.00000	7.597E-10	1.00000	7.600E-10
ok	Mo-99	6	1.00000	6.052E-10	1.00000	6.000E-10
ok	Tc-95m	1	1.00000	4.752E-09	1.00000	4.700E-09
ok	Tc-95m	2	0.50000	2.830E-09	0.50000	2.800E-09
ok	Tc-95m	3	0.50000	1.599E-09	0.50000	1.600E-09
ok	Tc-95m	4	0.50000	1.037E-09	0.50000	1.000E-09
ok	Tc-95m	5	0.50000	7.035E-10	0.50000	6.900E-10
ok	Tc-95m	6	0.50000	5.619E-10	0.50000	5.600E-10
ok	Tc-95	1	1.00000	1.005E-09	1.00000	9.900E-10
ok	Tc-95	2	0.50000	8.837E-10	0.50000	8.700E-10
ok	Tc-95	3	0.50000	5.143E-10	0.50000	5.000E-10
ok	Tc-95	4	0.50000	3.371E-10	0.50000	3.300E-10
ok	Tc-95	5	0.50000	2.293E-10	0.50000	2.300E-10
ok	Tc-95	6	0.50000	1.826E-10	0.50000	1.800E-10
ok	Tc-99m	1	1.00000	2.048E-10	1.00000	2.000E-10
ok	Tc-99m	2	0.50000	1.345E-10	0.50000	1.300E-10
ok	Tc-99m	3	0.50000	7.203E-11	0.50000	7.200E-11
ok	Tc-99m	4	0.50000	4.346E-11	0.50000	4.300E-11
ok	Tc-99m	5	0.50000	2.859E-11	0.50000	2.800E-11
ok	Tc-99m	6	0.50000	2.229E-11	0.50000	2.200E-11
ok	Tc-99	1	1.00000	1.033E-08	1.00000	1.000E-08
ok	Tc-99	2	0.50000	4.771E-09	0.50000	4.800E-09
ok	Tc-99	3	0.50000	2.303E-09	0.50000	2.300E-09
ok	Tc-99	4	0.50000	1.310E-09	0.50000	1.300E-09
ok	Tc-99	5	0.50000	8.236E-10	0.50000	8.200E-10
ok	Tc-99	6	0.50000	6.418E-10	0.50000	6.400E-10
ok	Ru-103	1	0.10000	7.092E-09	0.10000	7.100E-09
ok	Ru-103	2	0.05000	4.633E-09	0.05000	4.600E-09
ok	Ru-103	3	0.05000	2.444E-09	0.05000	2.400E-09
ok	Ru-103	4	0.05000	1.517E-09	0.05000	1.500E-09
ok	Ru-103	5	0.05000	9.177E-10	0.05000	9.200E-10
ok	Ru-103	6	0.05000	7.339E-10	0.05000	7.300E-10
ok	Ru-106	1	0.10000	8.389E-08	0.10000	8.400E-08
ok	Ru-106	2	0.05000	4.966E-08	0.05000	4.900E-08
ok	Ru-106	3	0.05000	2.519E-08	0.05000	2.500E-08
ok	Ru-106	4	0.05000	1.498E-08	0.05000	1.500E-08
ok	Ru-106	5	0.05000	8.639E-09	0.05000	8.600E-09
ok	Ru-106	6	0.05000	7.010E-09	0.05000	7.000E-09
ok	Ag-108m	1	0.10000	2.068E-08	0.10000	2.100E-08
ok	Ag-108m	2	0.05000	1.122E-08	0.05000	1.100E-08
ok	Ag-108m	3	0.05000	6.552E-09	0.05000	6.500E-09
ok	Ag-108m	4	0.05000	4.315E-09	0.05000	4.300E-09
ok	Ag-108m	5	0.05000	2.864E-09	0.05000	2.800E-09
ok	Ag-108m	6	0.05000	2.361E-09	0.05000	2.300E-09
ok	Ag-110m	1	0.10000	2.408E-08	0.10000	2.400E-08
ok	Ag-110m	2	0.05000	1.369E-08	0.05000	1.400E-08
ok	Ag-110m	3	0.05000	7.898E-09	0.05000	7.800E-09
ok	Ag-110m	4	0.05000	5.218E-09	0.05000	5.200E-09
ok	Ag-110m	5	0.05000	3.437E-09	0.05000	3.400E-09
ok	Ag-110m	6	0.05000	2.790E-09	0.05000	2.800E-09
ok	Sb-124	1	0.20000	2.454E-08	0.20000	2.500E-08
ok	Sb-124	2	0.10000	1.596E-08	0.10000	1.600E-08
ok	Sb-124	3	0.10000	8.406E-09	0.10000	8.400E-09
ok	Sb-124	4	0.10000	5.217E-09	0.10000	5.200E-09
ok	Sb-124	5	0.10000	3.171E-09	0.10000	3.200E-09
ok	Sb-124	6	0.10000	2.545E-09	0.10000	2.500E-09
ok	Sb-125	1	0.20000	1.074E-08	0.20000	1.100E-08
ok	Sb-125	2	0.10000	6.091E-09	0.10000	6.100E-09
ok	Sb-125	3	0.10000	3.401E-09	0.10000	3.400E-09
ok	Sb-125	4	0.10000	2.112E-09	0.10000	2.100E-09
ok	Sb-125	5	0.10000	1.355E-09	0.10000	1.400E-09
ok	Sb-125	6	0.10000	1.134E-09	0.10000	1.100E-09
ok	Sb-126	1	0.20000	1.999E-08	0.20000	2.000E-08
ok	Sb-126	2	0.10000	1.409E-08	0.10000	1.400E-08
ok	Sb-126	3	0.10000	7.699E-09	0.10000	7.600E-09
ok	Sb-126	4	0.10000	4.922E-09	0.10000	4.900E-09
ok	Sb-126	5	0.10000	3.092E-09	0.10000	3.100E-09
ok	Sb-126	6	0.10000	2.463E-09	0.10000	2.400E-09
ok	Sb-127	1	0.20000	1.676E-08	0.20000	1.700E-08
ok	Sb-127	2	0.10000	1.159E-08	0.10000	1.200E-08
ok	Sb-127	3	0.10000	5.913E-09	0.10000	5.900E-09
ok	Sb-127	4	0.10000	3.575E-09	0.10000	3.600E-09
ok	Sb-127	5	0.10000	2.087E-09	0.10000	2.100E-09
ok	Sb-127	6	0.10000	1.671E-09	0.10000	1.700E-09
ok	Te-125m	1	0.60000	1.285E-08	0.60000	1.300E-08

ok	Te-125m	2	0.30000	6.332E-09	0.30000	6.300E-09
ok	Te-125m	3	0.30000	3.339E-09	0.30000	3.300E-09
ok	Te-125m	4	0.30000	1.861E-09	0.30000	1.900E-09
ok	Te-125m	5	0.30000	1.088E-09	0.30000	1.100E-09
ok	Te-125m	6	0.30000	8.715E-10	0.30000	8.700E-10
ok	Te-127m	1	0.60000	4.088E-08	0.60000	4.100E-08
ok	Te-127m	2	0.30000	1.840E-08	0.30000	1.800E-08
ok	Te-127m	3	0.30000	9.482E-09	0.30000	9.500E-09
ok	Te-127m	4	0.30000	5.167E-09	0.30000	5.200E-09
ok	Te-127m	5	0.30000	3.029E-09	0.30000	3.000E-09
ok	Te-127m	6	0.30000	2.340E-09	0.30000	2.300E-09
ok	Te-127	1	0.60000	1.510E-09	0.60000	1.500E-09
ok	Te-127	2	0.30000	1.246E-09	0.30000	1.200E-09
ok	Te-127	3	0.30000	6.184E-10	0.30000	6.200E-10
ok	Te-127	4	0.30000	3.643E-10	0.30000	3.600E-10
ok	Te-127	5	0.30000	2.116E-10	0.30000	2.100E-10
ok	Te-127	6	0.30000	1.687E-10	0.30000	1.700E-10
ok	I-123	1	1.00000	2.235E-09	1.00000	2.200E-09
ok	I-123	2	1.00000	1.973E-09	1.00000	1.900E-09
ok	I-123	3	1.00000	1.067E-09	1.00000	1.100E-09
ok	I-123	4	1.00000	5.019E-10	1.00000	4.900E-10
ok	I-123	5	1.00000	3.337E-10	1.00000	3.300E-10
ok	I-123	6	1.00000	2.177E-10	1.00000	2.100E-10
ok	I-125	1	1.00000	5.246E-08	1.00000	5.200E-08
ok	I-125	2	1.00000	5.790E-08	1.00000	5.700E-08
ok	I-125	3	1.00000	4.191E-08	1.00000	4.100E-08
ok	I-125	4	1.00000	3.175E-08	1.00000	3.100E-08
ok	I-125	5	1.00000	2.226E-08	1.00000	2.200E-08
ok	I-125	6	1.00000	1.539E-08	1.00000	1.500E-08
ok	I-129	1	1.00000	1.840E-07	1.00000	1.800E-07
ok	I-129	2	1.00000	2.153E-07	1.00000	2.200E-07
ok	I-129	3	1.00000	1.724E-07	1.00000	1.700E-07
ok	I-129	4	1.00000	1.880E-07	1.00000	1.900E-07
ok	I-129	5	1.00000	1.395E-07	1.00000	1.400E-07
ok	I-129	6	1.00000	1.057E-07	1.00000	1.100E-07
ok	I-131	1	1.00000	1.842E-07	1.00000	1.800E-07
ok	I-131	2	1.00000	1.790E-07	1.00000	1.800E-07
ok	I-131	3	1.00000	1.036E-07	1.00000	1.000E-07
ok	I-131	4	1.00000	5.237E-08	1.00000	5.200E-08
ok	I-131	5	1.00000	3.424E-08	1.00000	3.400E-08
ok	I-131	6	1.00000	2.175E-08	1.00000	2.200E-08
ok	I-132	1	1.00000	3.027E-09	1.00000	3.000E-09
ok	I-132	2	1.00000	2.388E-09	1.00000	2.400E-09
ok	I-132	3	1.00000	1.262E-09	1.00000	1.300E-09
ok	I-132	4	1.00000	6.221E-10	1.00000	6.200E-10
ok	I-132	5	1.00000	4.169E-10	1.00000	4.100E-10
ok	I-132	6	1.00000	2.870E-10	1.00000	2.900E-10
ok	I-133	1	1.00000	4.927E-08	1.00000	4.900E-08
ok	I-133	2	1.00000	4.397E-08	1.00000	4.400E-08
ok	I-133	3	1.00000	2.325E-08	1.00000	2.300E-08
--->	I-133	4	1.00000	1.050E-08	1.00000	1.000E-08
ok	I-133	5	1.00000	6.794E-09	1.00000	6.800E-09
ok	I-133	6	1.00000	4.279E-09	1.00000	4.300E-09
ok	I-134	1	1.00000	1.125E-09	1.00000	1.100E-09
ok	I-134	2	1.00000	7.483E-10	1.00000	7.500E-10

ok	I-134	3	1.00000	3.875E-10	1.00000	3.900E-10
ok	I-134	4	1.00000	2.108E-10	1.00000	2.100E-10
ok	I-134	5	1.00000	1.443E-10	1.00000	1.400E-10
ok	I-134	6	1.00000	1.076E-10	1.00000	1.100E-10
ok	I-135	1	1.00000	1.036E-08	1.00000	1.000E-08
ok	I-135	2	1.00000	8.943E-09	1.00000	8.900E-09
ok	I-135	3	1.00000	4.741E-09	1.00000	4.700E-09
ok	I-135	4	1.00000	2.192E-09	1.00000	2.200E-09
ok	I-135	5	1.00000	1.440E-09	1.00000	1.400E-09
ok	I-135	6	1.00000	9.348E-10	1.00000	9.300E-10
ok	Cs-134	1	1.00000	2.579E-08	1.00000	2.600E-08
ok	Cs-134	2	1.00000	1.574E-08	1.00000	1.600E-08
ok	Cs-134	3	1.00000	1.318E-08	1.00000	1.300E-08
ok	Cs-134	4	1.00000	1.409E-08	1.00000	1.400E-08
ok	Cs-134	5	1.00000	1.897E-08	1.00000	1.900E-08
ok	Cs-134	6	1.00000	1.924E-08	1.00000	1.900E-08
ok	Cs-136	1	1.00000	1.454E-08	1.00000	1.500E-08
ok	Cs-136	2	1.00000	9.611E-09	1.00000	9.500E-09
ok	Cs-136	3	1.00000	6.121E-09	1.00000	6.100E-09
ok	Cs-136	4	1.00000	4.381E-09	1.00000	4.300E-09
ok	Cs-136	5	1.00000	3.437E-09	1.00000	3.400E-09
ok	Cs-136	6	1.00000	3.074E-09	1.00000	3.000E-09
ok	Cs-137	1	1.00000	2.105E-08	1.00000	2.100E-08
ok	Cs-137	2	1.00000	1.238E-08	1.00000	1.200E-08
ok	Cs-137	3	1.00000	9.685E-09	1.00000	9.600E-09
ok	Cs-137	4	1.00000	1.014E-08	1.00000	1.000E-08
ok	Cs-137	5	1.00000	1.337E-08	1.00000	1.300E-08
ok	Cs-137	6	1.00000	1.356E-08	1.00000	1.300E-08
ok	Ba-133	1	0.60000	2.134E-08	0.60000	2.200E-08
ok	Ba-133	2	0.30000	6.234E-09	0.30000	6.200E-09
ok	Ba-133	3	0.30000	3.879E-09	0.30000	3.900E-09
ok	Ba-133	4	0.30000	4.678E-09	0.30000	4.700E-09
ok	Ba-133	5	0.30000	7.235E-09	0.30000	7.300E-09
ok	Ba-133	6	0.20000	1.531E-09	0.20000	1.500E-09
ok	Ba-140	1	0.60000	3.183E-08	0.60000	3.200E-08
ok	Ba-140	2	0.30000	1.790E-08	0.30000	1.800E-08
ok	Ba-140	3	0.30000	9.181E-09	0.30000	9.200E-09
ok	Ba-140	4	0.30000	5.826E-09	0.30000	5.800E-09
ok	Ba-140	5	0.30000	3.719E-09	0.30000	3.700E-09
ok	Ba-140	6	0.20000	2.598E-09	0.20000	2.600E-09
<<<<	La-140	1	0.01000	1.948E-08	0.00500	1.900E-08
<<<<	La-140	2	0.00100	1.299E-08	0.00050	1.300E-08
<<<<	La-140	3	0.00100	6.779E-09	0.00050	6.800E-09
<<<<	La-140	4	0.00100	4.201E-09	0.00050	4.200E-09
<<<<	La-140	5	0.00100	2.522E-09	0.00050	2.500E-09
<<<<	La-140	6	0.00100	2.022E-09	0.00050	2.000E-09
ok	Ce-141	1	0.00500	8.121E-09	0.00500	8.100E-09
ok	Ce-141	2	0.00050	5.150E-09	0.00050	5.100E-09
ok	Ce-141	3	0.00050	2.591E-09	0.00050	2.600E-09
ok	Ce-141	4	0.00050	1.547E-09	0.00050	1.500E-09
ok	Ce-141	5	0.00050	8.855E-10	0.00050	8.800E-10
ok	Ce-141	6	0.00050	7.113E-10	0.00050	7.100E-10
ok	Ce-144	1	0.00500	6.618E-08	0.00500	6.600E-08
ok	Ce-144	2	0.00050	3.880E-08	0.00050	3.900E-08
ok	Ce-144	3	0.00050	1.937E-08	0.00050	1.900E-08

ok	Ce-144	4	0.00050	1.149E-08	0.00050	1.100E-08
ok	Ce-144	5	0.00050	6.505E-09	0.00050	6.500E-09
ok	Ce-144	6	0.00050	5.234E-09	0.00050	5.200E-09
ok	Bi-210	1	0.10000	1.503E-08	0.10000	1.500E-08
ok	Bi-210	2	0.05000	9.721E-09	0.05000	9.700E-09
ok	Bi-210	3	0.05000	4.843E-09	0.05000	4.800E-09
ok	Bi-210	4	0.05000	2.869E-09	0.05000	2.900E-09
ok	Bi-210	5	0.05000	1.626E-09	0.05000	1.600E-09
ok	Bi-210	6	0.05000	1.307E-09	0.05000	1.300E-09
ok	Bi-212	1	0.10000	3.194E-09	0.10000	3.200E-09
ok	Bi-212	2	0.05000	1.778E-09	0.05000	1.800E-09
ok	Bi-212	3	0.05000	8.729E-10	0.05000	8.700E-10
ok	Bi-212	4	0.05000	5.046E-10	0.05000	5.000E-10
ok	Bi-212	5	0.05000	3.292E-10	0.05000	3.300E-10
ok	Bi-212	6	0.05000	2.591E-10	0.05000	2.600E-10
ok	Po-210	1	1.00000	2.603E-05	1.00000	2.600E-05
ok	Po-210	2	0.50000	8.798E-06	0.50000	8.800E-06
ok	Po-210	3	0.50000	4.374E-06	0.50000	4.400E-06
ok	Po-210	4	0.50000	2.588E-06	0.50000	2.600E-06
ok	Po-210	5	0.50000	1.571E-06	0.50000	1.600E-06
ok	Po-210	6	0.50000	1.209E-06	0.50000	1.200E-06
<<<<	Ac-228	1	0.01000	8.956E-09	0.00500	7.400E-09
<<<<	Ac-228	2	0.00100	2.952E-09	0.00050	2.800E-09
<<<<	Ac-228	3	0.00100	1.536E-09	0.00050	1.400E-09
<<<<	Ac-228	4	0.00100	9.319E-10	0.00050	8.700E-10
<<<<	Ac-228	5	0.00100	5.729E-10	0.00050	5.300E-10
<<<<	Ac-228	6	0.00100	4.682E-10	0.00050	4.300E-10
<<<<	Pa-233	1	0.01000	9.888E-09	0.00500	9.600E-09
<<<<	Pa-233	2	0.00100	6.234E-09	0.00050	6.200E-09
<<<<	Pa-233	3	0.00100	3.159E-09	0.00050	3.200E-09
<<<<	Pa-233	4	0.00100	1.900E-09	0.00050	1.900E-09
<<<<	Pa-233	5	0.00100	1.098E-09	0.00050	1.100E-09
<<<<	Pa-233	6	0.00100	8.793E-10	0.00050	8.700E-10
<<<<	Pa-234	1	0.01000	5.065E-09	0.00500	5.000E-09
<<<<	Pa-234	2	0.00100	3.321E-09	0.00050	3.200E-09
<<<<	Pa-234	3	0.00100	1.734E-09	0.00050	1.700E-09
<<<<	Pa-234	4	0.00100	1.071E-09	0.00050	1.000E-09
<<<<	Pa-234	5	0.00100	6.546E-10	0.00050	6.400E-10
<<<<	Pa-234	6	0.00100	5.235E-10	0.00050	5.100E-10
ok	Np-236L	1	0.00500	1.906E-07	0.00500	1.900E-07
ok	Np-236L	2	0.00050	2.473E-08	0.00050	2.400E-08
ok	Np-236L	3	0.00050	1.860E-08	0.00050	1.800E-08
ok	Np-236L	4	0.00050	1.780E-08	0.00050	1.800E-08
ok	Np-236L	5	0.00050	1.817E-08	0.00050	1.800E-08
ok	Np-236L	6	0.00050	1.739E-08	0.00050	1.700E-08
ok	Np-236S	1	0.00500	2.520E-09	0.00500	2.500E-09
ok	Np-236S	2	0.00050	1.316E-09	0.00050	1.300E-09
ok	Np-236S	3	0.00050	6.684E-10	0.00050	6.600E-10
ok	Np-236S	4	0.00050	4.024E-10	0.00050	3.900E-10
ok	Np-236S	5	0.00050	2.378E-10	0.00050	2.300E-10
ok	Np-236S	6	0.00050	1.937E-10	0.00050	1.900E-10
ok	Np-237	1	0.00500	1.997E-06	0.00500	2.000E-06
ok	Np-237	2	0.00050	2.118E-07	0.00050	2.100E-07
ok	Np-237	3	0.00050	1.427E-07	0.00050	1.400E-07
ok	Np-237	4	0.00050	1.146E-07	0.00050	1.100E-07
ok	Np-237	5	0.00050	1.083E-07	0.00050	1.100E-07
ok	Np-237	6	0.00050	1.070E-07	0.00050	1.100E-07
ok	Np-239	1	0.00500	8.893E-09	0.00500	8.900E-09
ok	Np-239	2	0.00050	5.754E-09	0.00050	5.700E-09
ok	Np-239	3	0.00050	2.898E-09	0.00050	2.900E-09
ok	Np-239	4	0.00050	1.734E-09	0.00050	1.700E-09
ok	Np-239	5	0.00050	9.967E-10	0.00050	1.000E-09
ok	Np-239	6	0.00050	7.986E-10	0.00050	8.000E-10
ok	Pu-236	1	0.00500	2.095E-06	0.00500	2.100E-06
ok	Pu-236	2	0.00050	2.158E-07	0.00050	2.200E-07
ok	Pu-236	3	0.00050	1.451E-07	0.00050	1.400E-07
ok	Pu-236	4	0.00050	1.038E-07	0.00050	1.000E-07
ok	Pu-236	5	0.00050	8.561E-08	0.00050	8.500E-08
ok	Pu-236	6	0.00050	8.694E-08	0.00050	8.400E-08
ok	Pu-238	1	0.00500	3.974E-06	0.00500	4.000E-06
ok	Pu-238	2	0.00050	3.998E-07	0.00050	4.000E-07
ok	Pu-238	3	0.00050	3.060E-07	0.00050	3.100E-07
ok	Pu-238	4	0.00050	2.443E-07	0.00050	2.400E-07
ok	Pu-238	5	0.00050	2.205E-07	0.00050	2.200E-07
ok	Pu-238	6	0.00050	2.280E-07	0.00050	2.200E-07
ok	Pu-239	1	0.00500	4.190E-06	0.00500	4.200E-06
ok	Pu-239	2	0.00050	4.217E-07	0.00050	4.200E-07
ok	Pu-239	3	0.00050	3.326E-07	0.00050	3.300E-07
ok	Pu-239	4	0.00050	2.710E-07	0.00050	2.700E-07
ok	Pu-239	5	0.00050	2.455E-07	0.00050	2.400E-07
ok	Pu-239	6	0.00050	2.507E-07	0.00050	2.500E-07
ok	Pu-240	1	0.00500	4.191E-06	0.00500	4.200E-06
ok	Pu-240	2	0.00050	4.219E-07	0.00050	4.200E-07
ok	Pu-240	3	0.00050	3.327E-07	0.00050	3.300E-07
ok	Pu-240	4	0.00050	2.710E-07	0.00050	2.700E-07
ok	Pu-240	5	0.00050	2.455E-07	0.00050	2.400E-07
ok	Pu-240	6	0.00050	2.507E-07	0.00050	2.500E-07
ok	Pu-241	1	0.00500	5.632E-08	0.00500	5.600E-08
ok	Pu-241	2	0.00050	5.802E-09	0.00050	5.700E-09
ok	Pu-241	3	0.00050	5.491E-09	0.00050	5.500E-09
ok	Pu-241	4	0.00050	5.053E-09	0.00050	5.100E-09
ok	Pu-241	5	0.00050	4.795E-09	0.00050	4.800E-09
ok	Pu-241	6	0.00050	4.746E-09	0.00050	4.800E-09
ok	Pu-242	1	0.00500	3.981E-06	0.00500	4.000E-06
ok	Pu-242	2	0.00050	4.008E-07	0.00050	4.000E-07
ok	Pu-242	3	0.00050	3.161E-07	0.00050	3.200E-07
ok	Pu-242	4	0.00050	2.576E-07	0.00050	2.600E-07
ok	Pu-242	5	0.00050	2.334E-07	0.00050	2.300E-07
ok	Pu-242	6	0.00050	2.383E-07	0.00050	2.400E-07
ok	Am-241	1	0.00500	3.725E-06	0.00500	3.700E-06
ok	Am-241	2	0.00050	3.752E-07	0.00050	3.700E-07
ok	Am-241	3	0.00050	2.741E-07	0.00050	2.700E-07
ok	Am-241	4	0.00050	2.223E-07	0.00050	2.200E-07
ok	Am-241	5	0.00050	2.043E-07	0.00050	2.000E-07
ok	Am-241	6	0.00050	2.040E-07	0.00050	2.000E-07
ok	Am-243	1	0.00500	3.658E-06	0.00500	3.600E-06
ok	Am-243	2	0.00050	3.699E-07	0.00050	3.700E-07
ok	Am-243	3	0.00050	2.715E-07	0.00050	2.700E-07
ok	Am-243	4	0.00050	2.211E-07	0.00050	2.200E-07
ok	Am-243	5	0.00050	2.033E-07	0.00050	2.000E-07

ok	Am-243	6	0.00050	2.026E-07	0.00050	2.000E-07
ok	Cm-242	1	0.00500	5.846E-07	0.00500	5.900E-07
ok	Cm-242	2	0.00050	7.603E-08	0.00050	7.600E-08
ok	Cm-242	3	0.00050	3.932E-08	0.00050	3.900E-08
ok	Cm-242	4	0.00050	2.360E-08	0.00050	2.400E-08
ok	Cm-242	5	0.00050	1.460E-08	0.00050	1.500E-08
ok	Cm-242	6	0.00050	1.171E-08	0.00050	1.200E-08
ok	Cm-243	1	0.00500	3.218E-06	0.00500	3.200E-06
ok	Cm-243	2	0.00050	3.257E-07	0.00050	3.200E-07
ok	Cm-243	3	0.00050	2.204E-07	0.00050	2.200E-07
ok	Cm-243	4	0.00050	1.658E-07	0.00050	1.600E-07
ok	Cm-243	5	0.00050	1.467E-07	0.00050	1.400E-07
ok	Cm-243	6	0.00050	1.487E-07	0.00050	1.500E-07
ok	Cm-244	1	0.00500	2.929E-06	0.00500	2.900E-06
ok	Cm-244	2	0.00050	2.932E-07	0.00050	2.900E-07
ok	Cm-244	3	0.00050	1.925E-07	0.00050	1.900E-07
ok	Cm-244	4	0.00050	1.395E-07	0.00050	1.400E-07
ok	Cm-244	5	0.00050	1.206E-07	0.00050	1.200E-07
ok	Cm-244	6	0.00050	1.226E-07	0.00050	1.200E-07

Comparison of age-specific effective dose coefficients, e (Sv/Bq) for inhalation intakes of radionuclides generated during FGR-13 computations (for QA purposes only) with values published by the ICRP. Values marked with "ok" differ by less than 5%. If the values differ by more that 5% they are marked by "-->". If the difference resulted from use of a different f1 values the comparison is marked by "<<<<".

			FGR-13			ICRP	
		Age	AMAD	Type / f1	e	Type / f1	e
ok	H-3	100	0.00	V 1.0E+00	6.347E-11	V 1.0E+00	6.400E-11
ok	H-3	365	0.00	V 1.0E+00	4.857E-11	V 1.0E+00	4.800E-11
ok	H-3	1825	0.00	V 1.0E+00	3.074E-11	V 1.0E+00	3.100E-11
ok	H-3	3650	0.00	V 1.0E+00	2.275E-11	V 1.0E+00	2.300E-11
ok	H-3	5475	0.00	V 1.0E+00	1.800E-11	V 1.0E+00	1.800E-11
ok	H-3	7300	0.00	V 1.0E+00	1.834E-11	V 1.0E+00	1.800E-11
ok	C-14	100	0.00	V 1.0E+00	1.877E-11	V 1.0E+00	1.900E-11
ok	C-14	365	0.00	V 1.0E+00	1.906E-11	V 1.0E+00	1.900E-11
ok	C-14	1825	0.00	V 1.0E+00	1.141E-11	V 1.0E+00	1.100E-11
ok	C-14	3650	0.00	V 1.0E+00	8.899E-12	V 1.0E+00	8.900E-11
ok	C-14	5475	0.00	V 1.0E+00	6.283E-12	V 1.0E+00	6.300E-11
ok	C-14	7300	0.00	V 1.0E+00	6.243E-12	V 1.0E+00	6.200E-10
ok	S-35	100	1.00	F 1.0E+00	5.433E-10	F 1.0E+00	5.500E-10
ok	S-35	365	1.00	F 8.0E-01	3.947E-10	F 8.0E-01	3.900E-10
ok	S-35	1825	1.00	F 8.0E-01	1.764E-10	F 8.0E-01	1.800E-10
ok	S-35	3650	1.00	F 8.0E-01	1.088E-10	F 8.0E-01	1.100E-10
ok	S-35	5475	1.00	F 8.0E-01	6.024E-11	F 8.0E-01	6.000E-11
ok	S-35	7300	1.00	F 8.0E-01	5.152E-11	F 8.0E-01	5.100E-11
ok	S-35	100	1.00	M 2.0E-01	5.862E-09	M 2.0E-01	5.900E-09
ok	S-35	365	1.00	M 1.0E-01	4.487E-09	M 1.0E-01	4.500E-09
ok	S-35	1825	1.00	M 1.0E-01	2.747E-09	M 1.0E-01	2.800E-09
ok	S-35	3650	1.00	M 1.0E-01	1.979E-09	M 1.0E-01	2.000E-09
ok	S-35	5475	1.00	M 1.0E-01	1.786E-09	M 1.0E-01	1.800E-09
ok	S-35	7300	1.00	M 1.0E-01	1.432E-09	M 1.0E-01	1.400E-09
ok	S-35	100	1.00	S 2.0E-02	7.638E-09	S 2.0E-02	7.700E-09
ok	S-35	365	1.00	S 1.0E-02	5.892E-09	S 1.0E-02	5.900E-09
ok	S-35	1825	1.00	S 1.0E-02	3.610E-09	S 1.0E-02	3.600E-09
ok	S-35	3650	1.00	S 1.0E-02	2.580E-09	S 1.0E-02	2.600E-09
ok	S-35	5475	1.00	S 1.0E-02	2.313E-09	S 1.0E-02	2.300E-09
ok	S-35	7300	1.00	S 1.0E-02	1.862E-09	S 1.0E-02	1.900E-09
ok	Ca-45	100	1.00	F 6.0E-01	5.616E-09	F 6.0E-01	5.700E-09
ok	Ca-45	365	1.00	F 4.0E-01	2.948E-09	F 4.0E-01	3.000E-09
ok	Ca-45	1825	1.00	F 4.0E-01	1.410E-09	F 4.0E-01	1.400E-09
ok	Ca-45	3650	1.00	F 4.0E-01	1.047E-09	F 4.0E-01	1.000E-09
ok	Ca-45	5475	1.00	F 4.0E-01	7.520E-10	F 4.0E-01	7.600E-10
ok	Ca-45	9125	1.00	F 3.0E-01	4.663E-10	F 3.0E-01	4.600E-10
ok	Ca-45	100	1.00	M 2.0E-01	1.189E-08	M 2.0E-01	1.200E-08
ok	Ca-45	365	1.00	M 1.0E-01	8.727E-09	M 1.0E-01	8.800E-09
ok	Ca-45	1825	1.00	M 1.0E-01	5.259E-09	M 1.0E-01	5.300E-09
ok	Ca-45	3650	1.00	M 1.0E-01	3.834E-09	M 1.0E-01	3.900E-09
ok	Ca-45	5475	1.00	M 1.0E-01	3.454E-09	M 1.0E-01	3.500E-09
ok	Ca-45	9125	1.00	M 1.0E-01	2.715E-09	M 1.0E-01	2.700E-09
ok	Ca-45	100	1.00	S 2.0E-02	1.464E-08	S 2.0E-02	1.500E-08
ok	Ca-45	365	1.00	S 1.0E-02	1.163E-08	S 1.0E-02	1.200E-08
ok	Ca-45	1825	1.00	S 1.0E-02	7.107E-09	S 1.0E-02	7.100E-09
ok	Ca-45	3650	1.00	S 1.0E-02	5.065E-09	S 1.0E-02	5.100E-09
ok	Ca-45	5475	1.00	S 1.0E-02	4.515E-09	S 1.0E-02	4.600E-09
ok	Ca-45	9125	1.00	S 1.0E-02	3.641E-09	S 1.0E-02	3.700E-09
ok	Ca-47	100	1.00	F 6.0E-01	4.874E-09	F 6.0E-01	4.900E-09
ok	Ca-47	365	1.00	F 4.0E-01	3.588E-09	F 4.0E-01	3.600E-09
ok	Ca-47	1825	1.00	F 4.0E-01	1.712E-09	F 4.0E-01	1.700E-09
ok	Ca-47	3650	1.00	F 4.0E-01	1.058E-09	F 4.0E-01	1.100E-09
ok	Ca-47	5475	1.00	F 4.0E-01	6.132E-10	F 4.0E-01	6.100E-10
ok	Ca-47	9125	1.00	F 3.0E-01	5.577E-10	F 3.0E-01	5.500E-10
ok	Ca-47	100	1.00	M 2.0E-01	1.035E-08	M 2.0E-01	1.000E-08
ok	Ca-47	365	1.00	M 1.0E-01	7.651E-09	M 1.0E-01	7.700E-09
ok	Ca-47	1825	1.00	M 1.0E-01	4.161E-09	M 1.0E-01	4.200E-09
ok	Ca-47	3650	1.00	M 1.0E-01	2.923E-09	M 1.0E-01	2.900E-09
ok	Ca-47	5475	1.00	M 1.0E-01	2.350E-09	M 1.0E-01	2.400E-09
ok	Ca-47	9125	1.00	M 1.0E-01	1.889E-09	M 1.0E-01	1.900E-09
ok	Ca-47	100	1.00	S 2.0E-02	1.160E-08	S 2.0E-02	1.200E-08
ok	Ca-47	365	1.00	S 1.0E-02	8.439E-09	S 1.0E-02	8.400E-09
ok	Ca-47	1825	1.00	S 1.0E-02	4.612E-09	S 1.0E-02	4.600E-09
ok	Ca-47	3650	1.00	S 1.0E-02	3.252E-09	S 1.0E-02	3.300E-09
ok	Ca-47	5475	1.00	S 1.0E-02	2.636E-09	S 1.0E-02	2.600E-09
ok	Ca-47	9125	1.00	S 1.0E-02	2.108E-09	S 1.0E-02	2.100E-09
ok	Sc-47	100	1.00	S 1.0E-03	3.931E-09	S 1.0E-03	3.900E-09
ok	Sc-47	365	1.00	S 1.0E-04	2.813E-09	S 1.0E-04	2.800E-09
ok	Sc-47	1825	1.00	S 1.0E-04	1.540E-09	S 1.0E-04	1.500E-09
ok	Sc-47	3650	1.00	S 1.0E-04	1.101E-09	S 1.0E-04	1.100E-09
ok	Sc-47	5475	1.00	S 1.0E-04	9.179E-10	S 1.0E-04	9.200E-10
ok	Sc-47	7300	1.00	S 1.0E-04	7.243E-10	S 1.0E-04	7.300E-10
ok	Fe-55	100	1.00	F 6.0E-01	4.120E-09	F 6.0E-01	4.100E-09
ok	Fe-55	365	1.00	F 2.0E-01	3.201E-09	F 2.0E-01	3.200E-09
ok	Fe-55	1825	1.00	F 2.0E-01	2.194E-09	F 2.0E-01	2.200E-09
ok	Fe-55	3650	1.00	F 2.0E-01	1.408E-09	F 2.0E-01	1.400E-09
ok	Fe-55	5475	1.00	F 2.0E-01	9.427E-10	F 2.0E-01	9.400E-10
ok	Fe-55	7300	1.00	F 1.0E-01	7.810E-10	F 1.0E-01	7.700E-10
ok	Fe-55	100	1.00	M 2.0E-01	1.908E-09	M 2.0E-01	1.900E-09
ok	Fe-55	365	1.00	M 1.0E-01	1.442E-09	M 1.0E-01	1.400E-09
ok	Fe-55	1825	1.00	M 1.0E-01	9.888E-10	M 1.0E-01	9.900E-10
ok	Fe-55	3650	1.00	M 1.0E-01	6.230E-10	M 1.0E-01	6.200E-10
ok	Fe-55	5475	1.00	M 1.0E-01	4.391E-10	M 1.0E-01	4.400E-10
ok	Fe-55	7300	1.00	M 1.0E-01	3.877E-10	M 1.0E-01	3.800E-10
ok	Fe-55	100	1.00	S 2.0E-02	9.904E-10	S 2.0E-02	1.000E-09
ok	Fe-55	365	1.00	S 1.0E-02	8.400E-10	S 1.0E-02	8.500E-10
ok	Fe-55	1825	1.00	S 1.0E-02	4.977E-10	S 1.0E-02	5.000E-10
ok	Fe-55	3650	1.00	S 1.0E-02	2.926E-10	S 1.0E-02	2.900E-10
ok	Fe-55	5475	1.00	S 1.0E-02	2.030E-10	S 1.0E-02	2.000E-10
ok	Fe-55	7300	1.00	S 1.0E-02	1.839E-10	S 1.0E-02	1.800E-10
ok	Fe-59	100	1.00	F 6.0E-01	2.042E-08	F 6.0E-01	2.000E-08
ok	Fe-59	365	1.00	F 2.0E-01	1.308E-08	F 2.0E-01	1.300E-08
ok	Fe-59	1825	1.00	F 2.0E-01	7.095E-09	F 2.0E-01	7.000E-09
-->	Fe-59	3650	1.00	F 2.0E-01	4.433E-09	F 2.0E-01	4.200E-09
ok	Fe-59	5475	1.00	F 2.0E-01	2.652E-09	F 2.0E-01	2.600E-09
ok	Fe-59	7300	1.00	F 1.0E-01	2.226E-09	F 1.0E-01	2.200E-09
ok	Fe-59	100	1.00	M 2.0E-01	1.837E-08	M 2.0E-01	1.800E-08
ok	Fe-59	365	1.00	M 1.0E-01	1.327E-08	M 1.0E-01	1.300E-08
ok	Fe-59	1825	1.00	M 1.0E-01	7.863E-09	M 1.0E-01	7.900E-09

ok	Fe-59	3650	1.00	M	1.0E-01	5.495E-09	M	1.0E-01	5.500E-09
ok	Fe-59	5475	1.00	M	1.0E-01	4.577E-09	M	1.0E-01	4.600E-09
ok	Fe-59	7300	1.00	M	1.0E-01	3.697E-09	M	1.0E-01	3.700E-09
ok	Fe-59	100	1.00	S	2.0E-02	1.712E-08	S	2.0E-02	1.700E-08
ok	Fe-59	365	1.00	S	1.0E-02	1.340E-08	S	1.0E-02	1.300E-08
ok	Fe-59	1825	1.00	S	1.0E-02	8.100E-09	S	1.0E-02	8.100E-09
ok	Fe-59	3650	1.00	S	1.0E-02	5.785E-09	S	1.0E-02	5.800E-09
ok	Fe-59	5475	1.00	S	1.0E-02	5.040E-09	S	1.0E-02	5.100E-09
ok	Fe-59	7300	1.00	S	1.0E-02	4.030E-09	S	1.0E-02	4.000E-09
ok	Co-57	100	1.00	F	6.0E-01	1.452E-09	F	6.0E-01	1.500E-09
ok	Co-57	365	1.00	F	3.0E-01	1.086E-09	F	3.0E-01	1.100E-09
ok	Co-57	1825	1.00	F	3.0E-01	5.657E-10	F	3.0E-01	5.600E-10
ok	Co-57	3650	1.00	F	3.0E-01	3.685E-10	F	3.0E-01	3.700E-10
ok	Co-57	5475	1.00	F	3.0E-01	2.300E-10	F	3.0E-01	2.300E-10
ok	Co-57	7300	1.00	F	1.0E-01	1.876E-10	F	1.0E-01	1.900E-10
ok	Co-57	100	1.00	M	2.0E-01	2.745E-09	M	2.0E-01	2.800E-09
ok	Co-57	365	1.00	M	1.0E-01	2.166E-09	M	1.0E-01	2.200E-09
ok	Co-57	1825	1.00	M	1.0E-01	1.265E-09	M	1.0E-01	1.300E-09
ok	Co-57	3650	1.00	M	1.0E-01	8.504E-10	M	1.0E-01	8.500E-10
ok	Co-57	5475	1.00	M	1.0E-01	6.674E-10	M	1.0E-01	6.700E-10
ok	Co-57	7300	1.00	M	1.0E-01	5.488E-10	M	1.0E-01	5.500E-10
ok	Co-57	100	1.00	S	2.0E-02	4.345E-09	S	2.0E-02	4.400E-09
ok	Co-57	365	1.00	S	1.0E-02	3.706E-09	S	1.0E-02	3.700E-09
ok	Co-57	1825	1.00	S	1.0E-02	2.270E-09	S	1.0E-02	2.300E-09
ok	Co-57	3650	1.00	S	1.0E-02	1.506E-09	S	1.0E-02	1.500E-09
ok	Co-57	5475	1.00	S	1.0E-02	1.191E-09	S	1.0E-02	1.200E-09
ok	Co-57	7300	1.00	S	1.0E-02	1.000E-09	S	1.0E-02	1.000E-09
ok	Co-58	100	1.00	F	6.0E-01	3.992E-09	F	6.0E-01	4.000E-09
ok	Co-58	365	1.00	F	3.0E-01	3.045E-09	F	3.0E-01	3.000E-09
ok	Co-58	1825	1.00	F	3.0E-01	1.607E-09	F	3.0E-01	1.600E-09
ok	Co-58	3650	1.00	F	3.0E-01	1.026E-09	F	3.0E-01	1.000E-09
ok	Co-58	5475	1.00	F	3.0E-01	6.418E-10	F	3.0E-01	6.400E-10
ok	Co-58	7300	1.00	F	1.0E-01	5.355E-10	F	1.0E-01	5.300E-10
ok	Co-58	100	1.00	M	2.0E-01	7.284E-09	M	2.0E-01	7.300E-09
ok	Co-58	365	1.00	M	1.0E-01	6.512E-09	M	1.0E-01	6.500E-09
ok	Co-58	1825	1.00	M	1.0E-01	3.485E-09	M	1.0E-01	3.500E-09
ok	Co-58	3650	1.00	M	1.0E-01	2.408E-09	M	1.0E-01	2.400E-09
ok	Co-58	5475	1.00	M	1.0E-01	1.958E-09	M	1.0E-01	2.000E-09
ok	Co-58	7300	1.00	M	1.0E-01	1.592E-09	M	1.0E-01	1.600E-09
ok	Co-58	100	1.00	S	2.0E-02	9.021E-09	S	2.0E-02	9.000E-09
ok	Co-58	365	1.00	S	1.0E-02	7.461E-09	S	1.0E-02	7.400E-09
ok	Co-58	1825	1.00	S	1.0E-02	4.566E-09	S	1.0E-02	4.500E-09
ok	Co-58	3650	1.00	S	1.0E-02	3.154E-09	S	1.0E-02	3.100E-09
ok	Co-58	5475	1.00	S	1.0E-02	2.603E-09	S	1.0E-02	2.600E-09
ok	Co-58	7300	1.00	S	1.0E-02	2.115E-09	S	1.0E-02	2.100E-09
ok	Co-60	100	1.00	F	6.0E-01	3.004E-08	F	6.0E-01	3.000E-08
ok	Co-60	365	1.00	F	3.0E-01	2.339E-08	F	3.0E-01	2.300E-08
ok	Co-60	1825	1.00	F	3.0E-01	1.360E-08	F	3.0E-01	1.400E-08
ok	Co-60	3650	1.00	F	3.0E-01	8.885E-09	F	3.0E-01	8.900E-09
ok	Co-60	5475	1.00	F	3.0E-01	6.087E-09	F	3.0E-01	6.100E-09
ok	Co-60	7300	1.00	F	1.0E-01	5.268E-09	F	1.0E-01	5.200E-09
ok	Co-60	100	1.00	M	2.0E-01	4.159E-08	M	2.0E-01	4.200E-08
ok	Co-60	365	1.00	M	1.0E-01	3.390E-08	M	1.0E-01	3.400E-08
ok	Co-60	1825	1.00	M	1.0E-01	2.130E-08	M	1.0E-01	2.100E-08
ok	Co-60	3650	1.00	M	1.0E-01	1.457E-08	M	1.0E-01	1.500E-08
ok	Co-60	5475	1.00	M	1.0E-01	1.207E-08	M	1.0E-01	1.200E-08
ok	Co-60	7300	1.00	M	1.0E-01	1.019E-08	M	1.0E-01	1.000E-08
ok	Co-60	100	1.00	S	2.0E-02	9.150E-08	S	2.0E-02	9.200E-08
ok	Co-60	365	1.00	S	1.0E-02	8.569E-08	S	1.0E-02	8.600E-08
ok	Co-60	1825	1.00	S	1.0E-02	5.883E-08	S	1.0E-02	5.900E-08
ok	Co-60	3650	1.00	S	1.0E-02	4.027E-08	S	1.0E-02	4.000E-08
ok	Co-60	5475	1.00	S	1.0E-02	3.418E-08	S	1.0E-02	3.400E-08
ok	Co-60	7300	1.00	S	1.0E-02	3.073E-08	S	1.0E-02	3.100E-08
ok	Ni-59	100	1.00	F	1.0E-01	9.535E-10	F	1.0E-01	9.600E-10
ok	Ni-59	365	1.00	F	5.0E-02	8.058E-10	F	5.0E-02	8.100E-10
ok	Ni-59	1825	1.00	F	5.0E-02	4.481E-10	F	5.0E-02	4.500E-10
ok	Ni-59	3650	1.00	F	5.0E-02	2.769E-10	F	5.0E-02	2.800E-10
ok	Ni-59	5475	1.00	F	5.0E-02	1.925E-10	F	5.0E-02	1.900E-10
ok	Ni-59	7300	1.00	F	5.0E-02	1.825E-10	F	5.0E-02	1.800E-10
ok	Ni-59	100	1.00	M	1.0E-01	7.782E-10	M	1.0E-01	7.900E-10
ok	Ni-59	365	1.00	M	5.0E-02	6.104E-10	M	5.0E-02	6.200E-10
ok	Ni-59	1825	1.00	M	5.0E-02	3.409E-10	M	5.0E-02	3.400E-10
ok	Ni-59	3650	1.00	M	5.0E-02	2.039E-10	M	5.0E-02	2.100E-10
ok	Ni-59	5475	1.00	M	5.0E-02	1.430E-10	M	5.0E-02	1.400E-10
ok	Ni-59	7300	1.00	M	5.0E-02	1.319E-10	M	5.0E-02	1.300E-10
ok	Ni-59	100	1.00	S	2.0E-02	1.647E-09	S	2.0E-02	1.700E-09
ok	Ni-59	365	1.00	S	1.0E-02	1.503E-09	S	1.0E-02	1.500E-09
ok	Ni-59	1825	1.00	S	1.0E-02	9.437E-10	S	1.0E-02	9.500E-10
ok	Ni-59	3650	1.00	S	1.0E-02	5.829E-10	S	1.0E-02	5.900E-10
ok	Ni-59	5475	1.00	S	1.0E-02	4.606E-10	S	1.0E-02	4.600E-10
ok	Ni-59	7300	1.00	S	1.0E-02	4.444E-10	S	1.0E-02	4.400E-10
ok	Ni-63	100	1.00	F	1.0E-01	2.303E-09	F	1.0E-01	2.300E-09
ok	Ni-63	365	1.00	F	5.0E-02	1.943E-09	F	5.0E-02	2.000E-09
ok	Ni-63	1825	1.00	F	5.0E-02	1.078E-09	F	5.0E-02	1.100E-09
ok	Ni-63	3650	1.00	F	5.0E-02	6.641E-10	F	5.0E-02	6.700E-10
ok	Ni-63	5475	1.00	F	5.0E-02	4.595E-10	F	5.0E-02	4.600E-10
ok	Ni-63	7300	1.00	F	5.0E-02	4.348E-10	F	5.0E-02	4.400E-10
ok	Ni-63	100	1.00	M	1.0E-01	2.476E-09	M	1.0E-01	2.500E-09
ok	Ni-63	365	1.00	M	5.0E-02	1.914E-09	M	5.0E-02	1.900E-09
ok	Ni-63	1825	1.00	M	5.0E-02	1.118E-09	M	5.0E-02	1.100E-09
ok	Ni-63	3650	1.00	M	5.0E-02	6.954E-10	M	5.0E-02	7.000E-10
ok	Ni-63	5475	1.00	M	5.0E-02	5.250E-10	M	5.0E-02	5.300E-10
ok	Ni-63	7300	1.00	M	5.0E-02	4.729E-10	M	5.0E-02	4.800E-10
ok	Ni-63	100	1.00	S	2.0E-02	4.743E-09	S	2.0E-02	4.800E-09
ok	Ni-63	365	1.00	S	1.0E-02	4.192E-09	S	1.0E-02	4.300E-09
ok	Ni-63	1825	1.00	S	1.0E-02	2.649E-09	S	1.0E-02	2.700E-09
ok	Ni-63	3650	1.00	S	1.0E-02	1.657E-09	S	1.0E-02	1.700E-09
ok	Ni-63	5475	1.00	S	1.0E-02	1.328E-09	S	1.0E-02	1.300E-09
ok	Ni-63	7300	1.00	S	1.0E-02	1.256E-09	S	1.0E-02	1.300E-09
ok	Zn-65	100	1.00	F	1.0E+00	1.462E-08	F	1.0E+00	1.500E-08
ok	Zn-65	365	1.00	F	5.0E-01	1.027E-08	F	5.0E-01	1.000E-08
ok	Zn-65	1825	1.00	F	5.0E-01	5.736E-09	F	5.0E-01	5.700E-09
ok	Zn-65	3650	1.00	F	5.0E-01	3.772E-09	F	5.0E-01	3.800E-09
ok	Zn-65	5475	1.00	F	5.0E-01	2.497E-09	F	5.0E-01	2.500E-09
ok	Zn-65	7300	1.00	F	5.0E-01	2.248E-09	F	5.0E-01	2.200E-09
ok	Zn-65	100	1.00	M	2.0E-01	8.525E-09	M	2.0E-01	8.500E-09
ok	Zn-65	365	1.00	M	1.0E-01	6.471E-09	M	1.0E-01	6.500E-09
ok	Zn-65	1825	1.00	M	1.0E-01	3.700E-09	M	1.0E-01	3.700E-09
ok	Zn-65	3650	1.00	M	1.0E-01	2.457E-09	M	1.0E-01	2.400E-09
ok	Zn-65	5475	1.00	M	1.0E-01	1.874E-09	M	1.0E-01	1.900E-09

ok	Zn-65	7300	1.00	M	1.0E-01	1.617E-09	M	1.0E-01	1.600E-09
ok	Zn-65	100	1.00	S	2.0E-02	7.647E-09	S	2.0E-02	7.600E-09
ok	Zn-65	365	1.00	S	1.0E-02	6.757E-09	S	1.0E-02	6.700E-09
ok	Zn-65	1825	1.00	S	1.0E-02	4.389E-09	S	1.0E-02	4.400E-09
ok	Zn-65	3650	1.00	S	1.0E-02	2.951E-09	S	1.0E-02	2.900E-09
ok	Zn-65	5475	1.00	S	1.0E-02	2.386E-09	S	1.0E-02	2.400E-09
ok	Zn-65	7300	1.00	S	1.0E-02	2.007E-09	S	1.0E-02	2.000E-09
ok	Se-75	100	1.00	F	1.0E+00	7.725E-09	F	1.0E+00	7.800E-09
ok	Se-75	365	1.00	F	8.0E-01	5.995E-09	F	8.0E-01	6.000E-09
ok	Se-75	1825	1.00	F	8.0E-01	3.403E-09	F	8.0E-01	3.400E-09
ok	Se-75	3650	1.00	F	8.0E-01	2.473E-09	F	8.0E-01	2.500E-09
ok	Se-75	5475	1.00	F	8.0E-01	1.192E-09	F	8.0E-01	1.200E-09
ok	Se-75	7300	1.00	F	8.0E-01	1.021E-09	F	8.0E-01	1.000E-09
-->	Se-75	100	1.00	M	2.0E-01	5.984E-09	M	2.0E-01	5.400E-09
ok	Se-75	365	1.00	M	1.0E-01	4.619E-09	M	1.0E-01	4.500E-09
ok	Se-75	1825	1.00	M	1.0E-01	2.532E-09	M	1.0E-01	2.500E-09
ok	Se-75	3650	1.00	M	1.0E-01	1.771E-09	M	1.0E-01	1.700E-09
ok	Se-75	5475	1.00	M	1.0E-01	1.286E-09	M	1.0E-01	1.300E-09
ok	Se-75	7300	1.00	M	1.0E-01	1.056E-09	M	1.0E-01	1.100E-09
ok	Se-79	100	1.00	F	1.0E+00	1.585E-08	F	1.0E+00	1.600E-08
ok	Se-79	365	1.00	F	8.0E-01	1.273E-08	F	8.0E-01	1.300E-08
ok	Se-79	1825	1.00	F	8.0E-01	7.699E-09	F	8.0E-01	7.700E-09
ok	Se-79	3650	1.00	F	8.0E-01	5.580E-09	F	8.0E-01	5.600E-09
ok	Se-79	5475	1.00	F	8.0E-01	1.523E-09	F	8.0E-01	1.500E-09
ok	Se-79	7300	1.00	F	8.0E-01	1.135E-09	F	8.0E-01	1.100E-09
ok	Se-79	100	1.00	M	2.0E-01	1.413E-08	M	2.0E-01	1.400E-08
ok	Se-79	365	1.00	M	1.0E-01	1.081E-08	M	1.0E-01	1.100E-08
ok	Se-79	1825	1.00	M	1.0E-01	6.845E-09	M	1.0E-01	6.900E-09
ok	Se-79	3650	1.00	M	1.0E-01	4.827E-09	M	1.0E-01	4.900E-09
ok	Se-79	5475	1.00	M	1.0E-01	3.297E-09	M	1.0E-01	3.300E-09
ok	Se-79	7300	1.00	M	1.0E-01	2.632E-09	M	1.0E-01	2.600E-09
ok	Sr-89	100	1.00	F	6.0E-01	1.527E-08	F	6.0E-01	1.500E-08
ok	Sr-89	365	1.00	F	4.0E-01	7.283E-09	F	4.0E-01	7.300E-09
ok	Sr-89	1825	1.00	F	4.0E-01	3.204E-09	F	4.0E-01	3.200E-09
ok	Sr-89	3650	1.00	F	4.0E-01	2.321E-09	F	4.0E-01	2.300E-09
ok	Sr-89	5475	1.00	F	4.0E-01	1.666E-09	F	4.0E-01	1.700E-09
ok	Sr-89	9125	1.00	F	3.0E-01	1.008E-09	F	3.0E-01	1.000E-09
ok	Sr-89	100	1.00	M	2.0E-01	3.271E-08	M	2.0E-01	3.300E-08
ok	Sr-89	365	1.00	M	1.0E-01	2.400E-08	M	1.0E-01	2.400E-08
ok	Sr-89	1825	1.00	M	1.0E-01	1.336E-08	M	1.0E-01	1.300E-08
ok	Sr-89	3650	1.00	M	1.0E-01	9.127E-09	M	1.0E-01	9.100E-09
ok	Sr-89	5475	1.00	M	1.0E-01	7.288E-09	M	1.0E-01	7.300E-09
ok	Sr-89	9125	1.00	M	1.0E-01	6.106E-09	M	1.0E-01	6.100E-09
ok	Sr-89	100	1.00	S	2.0E-02	3.884E-08	S	2.0E-02	3.900E-08
ok	Sr-89	365	1.00	S	1.0E-02	3.025E-08	S	1.0E-02	3.000E-08
ok	Sr-89	1825	1.00	S	1.0E-02	1.715E-08	S	1.0E-02	1.700E-08
ok	Sr-89	3650	1.00	S	1.0E-02	1.161E-08	S	1.0E-02	1.200E-08
ok	Sr-89	5475	1.00	S	1.0E-02	9.263E-09	S	1.0E-02	9.300E-09
ok	Sr-89	9125	1.00	S	1.0E-02	7.943E-09	S	1.0E-02	7.900E-09
ok	Sr-90	100	1.00	F	6.0E-01	1.229E-07	F	6.0E-01	1.200E-07
ok	Sr-90	365	1.00	F	4.0E-01	5.174E-08	F	4.0E-01	5.200E-08
ok	Sr-90	1825	1.00	F	4.0E-01	3.080E-08	F	4.0E-01	3.100E-08
ok	Sr-90	3650	1.00	F	4.0E-01	4.095E-08	F	4.0E-01	4.100E-08
ok	Sr-90	5475	1.00	F	4.0E-01	5.249E-08	F	4.0E-01	5.300E-08
ok	Sr-90	9125	1.00	F	3.0E-01	2.391E-08	F	3.0E-01	2.400E-08
ok	Sr-90	100	1.00	M	2.0E-01	1.479E-07	M	2.0E-01	1.500E-07
ok	Sr-90	365	1.00	M	1.0E-01	1.060E-07	M	1.0E-01	1.100E-07
ok	Sr-90	1825	1.00	M	1.0E-01	6.483E-08	M	1.0E-01	6.500E-08
ok	Sr-90	3650	1.00	M	1.0E-01	5.114E-08	M	1.0E-01	5.100E-08
ok	Sr-90	5475	1.00	M	1.0E-01	4.942E-08	M	1.0E-01	5.000E-08
ok	Sr-90	9125	1.00	M	1.0E-01	3.558E-08	M	1.0E-01	3.600E-08
ok	Sr-90	100	1.00	S	2.0E-02	4.138E-07	S	2.0E-02	4.200E-07
ok	Sr-90	365	1.00	S	1.0E-02	3.939E-07	S	1.0E-02	4.000E-07
ok	Sr-90	1825	1.00	S	1.0E-02	2.689E-07	S	1.0E-02	2.700E-07
ok	Sr-90	3650	1.00	S	1.0E-02	1.828E-07	S	1.0E-02	1.800E-07
ok	Sr-90	5475	1.00	S	1.0E-02	1.595E-07	S	1.0E-02	1.600E-07
ok	Sr-90	9125	1.00	S	1.0E-02	1.569E-07	S	1.0E-02	1.600E-07
ok	Y-90	100	1.00	M	1.0E-03	1.246E-08	M	1.0E-03	1.200E-08
ok	Y-90	365	1.00	M	1.0E-04	8.442E-09	M	1.0E-04	8.400E-09
ok	Y-90	1825	1.00	M	1.0E-04	4.004E-09	M	1.0E-04	4.000E-09
ok	Y-90	3650	1.00	M	1.0E-04	2.574E-09	M	1.0E-04	2.600E-09
ok	Y-90	5475	1.00	M	1.0E-04	1.654E-09	M	1.0E-04	1.700E-09
ok	Y-90	7300	1.00	M	1.0E-04	1.391E-09	M	1.0E-04	1.400E-09
ok	Y-90	100	1.00	S	1.0E-03	1.299E-08	S	1.0E-03	1.300E-08
ok	Y-90	365	1.00	S	1.0E-04	8.843E-09	S	1.0E-04	8.800E-09
ok	Y-90	1825	1.00	S	1.0E-04	4.227E-09	S	1.0E-04	4.200E-09
ok	Y-90	3650	1.00	S	1.0E-04	2.733E-09	S	1.0E-04	2.700E-09
ok	Y-90	5475	1.00	S	1.0E-04	1.779E-09	S	1.0E-04	1.800E-09
ok	Y-90	7300	1.00	S	1.0E-04	1.498E-09	S	1.0E-04	1.500E-09
ok	Zr-95	100	1.00	F	2.0E-02	1.202E-08	F	2.0E-02	1.200E-08
ok	Zr-95	365	1.00	F	2.0E-03	1.124E-08	F	2.0E-03	1.100E-08
ok	Zr-95	1825	1.00	F	2.0E-03	6.429E-09	F	2.0E-03	6.400E-09
ok	Zr-95	3650	1.00	F	2.0E-03	4.250E-09	F	2.0E-03	4.200E-09
ok	Zr-95	5475	1.00	F	2.0E-03	2.810E-09	F	2.0E-03	2.800E-09
ok	Zr-95	7300	1.00	F	2.0E-03	2.557E-09	F	2.0E-03	2.500E-09
ok	Zr-95	100	1.00	M	2.0E-02	1.956E-08	M	2.0E-02	2.000E-08
ok	Zr-95	365	1.00	M	2.0E-03	1.583E-08	M	2.0E-03	1.600E-08
ok	Zr-95	1825	1.00	M	2.0E-03	9.669E-09	M	2.0E-03	9.700E-09
ok	Zr-95	3650	1.00	M	2.0E-03	6.827E-09	M	2.0E-03	6.800E-09
ok	Zr-95	5475	1.00	M	2.0E-03	5.861E-09	M	2.0E-03	5.900E-09
ok	Zr-95	7300	1.00	M	2.0E-03	4.771E-09	M	2.0E-03	4.800E-09
ok	Zr-95	100	1.00	S	2.0E-02	2.377E-08	S	2.0E-02	2.400E-08
ok	Zr-95	365	1.00	S	2.0E-03	1.910E-08	S	2.0E-03	1.900E-08
ok	Zr-95	1825	1.00	S	2.0E-03	1.175E-08	S	2.0E-03	1.200E-08
ok	Zr-95	3650	1.00	S	2.0E-03	8.317E-09	S	2.0E-03	8.300E-09
ok	Zr-95	5475	1.00	S	2.0E-03	7.249E-09	S	2.0E-03	7.300E-09
ok	Zr-95	7300	1.00	S	2.0E-03	5.844E-09	S	2.0E-03	5.900E-09
ok	Nb-94	100	1.00	F	2.0E-02	3.151E-08	F	2.0E-02	3.100E-08
ok	Nb-94	365	1.00	F	1.0E-02	2.705E-08	F	1.0E-02	2.700E-08
ok	Nb-94	1825	1.00	F	1.0E-02	1.483E-08	F	1.0E-02	1.500E-08
ok	Nb-94	3650	1.00	F	1.0E-02	1.005E-08	F	1.0E-02	1.000E-08
ok	Nb-94	5475	1.00	F	1.0E-02	6.663E-09	F	1.0E-02	6.700E-09
ok	Nb-94	7300	1.00	F	1.0E-02	5.874E-09	F	1.0E-02	5.800E-09
ok	Nb-94	100	1.00	M	2.0E-02	4.317E-08	M	2.0E-02	4.300E-08
ok	Nb-94	365	1.00	M	1.0E-02	3.665E-08	M	1.0E-02	3.700E-08
ok	Nb-94	1825	1.00	M	1.0E-02	2.257E-08	M	1.0E-02	2.300E-08
ok	Nb-94	3650	1.00	M	1.0E-02	1.550E-08	M	1.0E-02	1.600E-08
ok	Nb-94	5475	1.00	M	1.0E-02	1.274E-08	M	1.0E-02	1.300E-08
ok	Nb-94	7300	1.00	M	1.0E-02	1.070E-08	M	1.0E-02	1.100E-08
ok	Nb-94	100	1.00	S	2.0E-02	1.229E-07	S	2.0E-02	1.200E-07

ok	Nb-94	365	1.00	S 1.0E-02	1.172E-07	S 1.0E-02	1.200E-07
ok	Nb-94	1825	1.00	S 1.0E-02	8.261E-08	S 1.0E-02	8.300E-08
ok	Nb-94	3650	1.00	S 1.0E-02	5.805E-08	S 1.0E-02	5.800E-08
ok	Nb-94	5475	1.00	S 1.0E-02	5.148E-08	S 1.0E-02	5.200E-08
ok	Nb-94	7300	1.00	S 1.0E-02	4.877E-08	S 1.0E-02	4.800E-08
ok	Nb-95m	100	1.00	F 2.0E-02	2.324E-09	F 2.0E-02	2.300E-09
ok	Nb-95m	365	1.00	F 1.0E-02	1.557E-09	F 1.0E-02	1.600E-09
ok	Nb-95m	1825	1.00	F 1.0E-02	7.045E-10	F 1.0E-02	7.000E-10
ok	Nb-95m	3650	1.00	F 1.0E-02	4.245E-10	F 1.0E-02	4.200E-10
ok	Nb-95m	5475	1.00	F 1.0E-02	2.367E-10	F 1.0E-02	2.400E-10
ok	Nb-95m	7300	1.00	F 1.0E-02	1.987E-10	F 1.0E-02	2.000E-10
ok	Nb-95m	100	1.00	M 2.0E-02	4.262E-09	M 2.0E-02	4.300E-09
ok	Nb-95m	365	1.00	M 1.0E-02	3.075E-09	M 1.0E-02	3.100E-09
ok	Nb-95m	1825	1.00	M 1.0E-02	1.686E-09	M 1.0E-02	1.700E-09
ok	Nb-95m	3650	1.00	M 1.0E-02	1.196E-09	M 1.0E-02	1.200E-09
ok	Nb-95m	5475	1.00	M 1.0E-02	9.931E-10	M 1.0E-02	1.000E-09
ok	Nb-95m	7300	1.00	M 1.0E-02	7.833E-10	M 1.0E-02	7.900E-10
ok	Nb-95m	100	1.00	S 2.0E-02	4.614E-09	S 2.0E-02	4.600E-09
ok	Nb-95m	365	1.00	S 1.0E-02	3.354E-09	S 1.0E-02	3.400E-09
ok	Nb-95m	1825	1.00	S 1.0E-02	1.861E-09	S 1.0E-02	1.900E-09
ok	Nb-95m	3650	1.00	S 1.0E-02	1.328E-09	S 1.0E-02	1.300E-09
ok	Nb-95m	5475	1.00	S 1.0E-02	1.118E-09	S 1.0E-02	1.100E-09
ok	Nb-95m	7300	1.00	S 1.0E-02	8.806E-10	S 1.0E-02	8.800E-10
ok	Nb-95	100	1.00	F 2.0E-02	4.102E-09	F 2.0E-02	4.100E-09
ok	Nb-95	365	1.00	F 1.0E-02	3.067E-09	F 1.0E-02	3.000E-09
ok	Nb-95	1825	1.00	F 1.0E-02	1.604E-09	F 1.0E-02	1.600E-09
ok	Nb-95	3650	1.00	F 1.0E-02	1.191E-09	F 1.0E-02	1.200E-09
ok	Nb-95	5475	1.00	F 1.0E-02	7.562E-10	F 1.0E-02	7.500E-10
ok	Nb-95	7300	1.00	F 1.0E-02	5.804E-10	F 1.0E-02	5.700E-10
ok	Nb-95	100	1.00	M 2.0E-02	6.772E-09	M 2.0E-02	6.800E-09
ok	Nb-95	365	1.00	M 1.0E-02	5.225E-09	M 1.0E-02	5.200E-09
ok	Nb-95	1825	1.00	M 1.0E-02	3.143E-09	M 1.0E-02	3.100E-09
ok	Nb-95	3650	1.00	M 1.0E-02	2.201E-09	M 1.0E-02	2.200E-09
ok	Nb-95	5475	1.00	M 1.0E-02	1.847E-09	M 1.0E-02	1.800E-09
ok	Nb-95	7300	1.00	M 1.0E-02	1.495E-09	M 1.0E-02	1.500E-09
ok	Nb-95	100	1.00	S 2.0E-02	7.633E-09	S 2.0E-02	7.700E-09
ok	Nb-95	365	1.00	S 1.0E-02	5.933E-09	S 1.0E-02	5.900E-09
ok	Nb-95	1825	1.00	S 1.0E-02	3.616E-09	S 1.0E-02	3.600E-09
ok	Nb-95	3650	1.00	S 1.0E-02	2.547E-09	S 1.0E-02	2.500E-09
ok	Nb-95	5475	1.00	S 1.0E-02	2.171E-09	S 1.0E-02	2.200E-09
ok	Nb-95	7300	1.00	S 1.0E-02	1.751E-09	S 1.0E-02	1.800E-09
ok	Mo-99	100	1.00	F 1.0E+00	2.299E-09	F 1.0E+00	2.300E-09
ok	Mo-99	365	1.00	F 8.0E-01	1.717E-09	F 8.0E-01	1.700E-09
ok	Mo-99	1825	1.00	F 8.0E-01	7.690E-10	F 8.0E-01	7.700E-10
ok	Mo-99	3650	1.00	F 8.0E-01	4.753E-10	F 8.0E-01	4.700E-10
ok	Mo-99	5475	1.00	F 8.0E-01	2.655E-10	F 8.0E-01	2.600E-10
ok	Mo-99	7300	1.00	F 8.0E-01	2.218E-10	F 8.0E-01	2.200E-10
ok	Mo-99	100	1.00	M 2.0E-01	6.026E-09	M 2.0E-01	6.000E-09
ok	Mo-99	365	1.00	M 1.0E-01	4.358E-09	M 1.0E-01	4.300E-09
ok	Mo-99	1825	1.00	M 1.0E-01	2.208E-09	M 1.0E-01	2.200E-09
ok	Mo-99	3650	1.00	M 1.0E-01	1.499E-09	M 1.0E-01	1.500E-09
ok	Mo-99	5475	1.00	M 1.0E-01	1.105E-09	M 1.0E-01	1.100E-09
ok	Mo-99	7300	1.00	M 1.0E-01	8.943E-10	M 1.0E-01	8.900E-10
ok	Mo-99	100	1.00	S 2.0E-02	6.857E-09	S 2.0E-02	6.900E-09
ok	Mo-99	365	1.00	S 1.0E-02	4.794E-09	S 1.0E-02	4.800E-09
ok	Mo-99	1825	1.00	S 1.0E-02	2.436E-09	S 1.0E-02	2.400E-09
ok	Mo-99	3650	1.00	S 1.0E-02	1.657E-09	S 1.0E-02	1.700E-09
ok	Mo-99	5475	1.00	S 1.0E-02	1.227E-09	S 1.0E-02	1.200E-09
ok	Mo-99	7300	1.00	S 1.0E-02	9.919E-10	S 1.0E-02	9.900E-10
ok	Tc-95m	100	1.00	F 1.0E+00	2.461E-09	F 1.0E+00	2.400E-09
ok	Tc-95m	365	1.00	F 8.0E-01	1.865E-09	F 8.0E-01	1.800E-09
ok	Tc-95m	1825	1.00	F 8.0E-01	9.423E-10	F 8.0E-01	9.300E-10
ok	Tc-95m	3650	1.00	F 8.0E-01	5.819E-10	F 8.0E-01	5.700E-10
ok	Tc-95m	5475	1.00	F 8.0E-01	3.628E-10	F 8.0E-01	3.600E-10
ok	Tc-95m	7300	1.00	F 8.0E-01	2.959E-10	F 8.0E-01	2.900E-10
ok	Tc-95m	100	1.00	M 2.0E-01	4.940E-09	M 2.0E-01	4.900E-09
ok	Tc-95m	365	1.00	M 1.0E-01	4.028E-09	M 1.0E-01	4.000E-09
ok	Tc-95m	1825	1.00	M 1.0E-01	2.354E-09	M 1.0E-01	2.300E-09
ok	Tc-95m	3650	1.00	M 1.0E-01	1.564E-09	M 1.0E-01	1.500E-09
ok	Tc-95m	5475	1.00	M 1.0E-01	1.100E-09	M 1.0E-01	1.100E-09
ok	Tc-95m	7300	1.00	M 1.0E-01	8.890E-10	M 1.0E-01	8.800E-10
ok	Tc-95m	100	1.00	S 2.0E-02	6.034E-09	S 2.0E-02	6.000E-09
ok	Tc-95m	365	1.00	S 1.0E-02	5.054E-09	S 1.0E-02	5.000E-09
ok	Tc-95m	1825	1.00	S 1.0E-02	2.698E-09	S 1.0E-02	2.700E-09
ok	Tc-95m	3650	1.00	S 1.0E-02	1.838E-09	S 1.0E-02	1.800E-09
ok	Tc-95m	5475	1.00	S 1.0E-02	1.477E-09	S 1.0E-02	1.500E-09
ok	Tc-95m	7300	1.00	S 1.0E-02	1.195E-09	S 1.0E-02	1.200E-09
ok	Tc-95	100	1.00	F 1.0E+00	7.629E-10	F 1.0E+00	7.500E-10
ok	Tc-95	365	1.00	F 8.0E-01	6.449E-10	F 8.0E-01	6.300E-10
ok	Tc-95	1825	1.00	F 8.0E-01	3.365E-10	F 8.0E-01	3.300E-10
ok	Tc-95	3650	1.00	F 8.0E-01	2.008E-10	F 8.0E-01	2.000E-10
ok	Tc-95	5475	1.00	F 8.0E-01	1.228E-10	F 8.0E-01	1.200E-10
ok	Tc-95	7300	1.00	F 8.0E-01	9.738E-11	F 8.0E-01	9.600E-11
ok	Tc-95	100	1.00	M 2.0E-01	8.478E-10	M 2.0E-01	8.300E-10
ok	Tc-95	365	1.00	M 1.0E-01	7.053E-10	M 1.0E-01	6.900E-10
ok	Tc-95	1825	1.00	M 1.0E-01	3.666E-10	M 1.0E-01	3.600E-10
ok	Tc-95	3650	1.00	M 1.0E-01	2.269E-10	M 1.0E-01	2.200E-10
ok	Tc-95	5475	1.00	M 1.0E-01	1.359E-10	M 1.0E-01	1.300E-10
-->	Tc-95	7300	1.00	M 1.0E-01	1.066E-10	M 1.0E-01	1.000E-10
ok	Tc-95	100	1.00	S 2.0E-02	8.703E-10	S 2.0E-02	8.500E-10
ok	Tc-95	365	1.00	S 1.0E-02	7.154E-10	S 1.0E-02	7.000E-10
ok	Tc-95	1825	1.00	S 1.0E-02	3.716E-10	S 1.0E-02	3.600E-10
ok	Tc-95	3650	1.00	S 1.0E-02	2.311E-10	S 1.0E-02	2.300E-10
ok	Tc-95	5475	1.00	S 1.0E-02	1.379E-10	S 1.0E-02	1.400E-10
ok	Tc-95	7300	1.00	S 1.0E-02	1.081E-10	S 1.0E-02	1.100E-10
ok	Tc-99m	100	1.00	F 1.0E+00	1.153E-10	F 1.0E+00	1.200E-10
ok	Tc-99m	365	1.00	F 8.0E-01	8.711E-11	F 8.0E-01	8.700E-11
ok	Tc-99m	1825	1.00	F 8.0E-01	4.133E-11	F 8.0E-01	4.100E-11
ok	Tc-99m	3650	1.00	F 8.0E-01	2.385E-11	F 8.0E-01	2.400E-11
ok	Tc-99m	5475	1.00	F 8.0E-01	1.461E-11	F 8.0E-01	1.500E-11
ok	Tc-99m	7300	1.00	F 8.0E-01	1.158E-11	F 8.0E-01	1.200E-11
ok	Tc-99m	100	1.00	M 2.0E-01	1.330E-10	M 2.0E-01	1.300E-10
ok	Tc-99m	365	1.00	M 1.0E-01	9.915E-11	M 1.0E-01	9.900E-11
ok	Tc-99m	1825	1.00	M 1.0E-01	5.105E-11	M 1.0E-01	5.100E-11
ok	Tc-99m	3650	1.00	M 1.0E-01	3.397E-11	M 1.0E-01	3.400E-11
ok	Tc-99m	5475	1.00	M 1.0E-01	2.401E-11	M 1.0E-01	2.400E-11
ok	Tc-99m	7300	1.00	M 1.0E-01	1.926E-11	M 1.0E-01	1.900E-11
ok	Tc-99m	100	1.00	S 2.0E-02	1.346E-10	S 2.0E-02	1.300E-10
ok	Tc-99m	365	1.00	S 1.0E-02	1.004E-10	S 1.0E-02	1.000E-10
ok	Tc-99m	1825	1.00	S 1.0E-02	5.212E-11	S 1.0E-02	5.200E-11

ok	Tc-99m	3650	1.00	S	1.0E-02	3.512E-11	S	1.0E-02	3.500E-11
ok	Tc-99m	5475	1.00	S	1.0E-02	2.506E-11	S	1.0E-02	2.500E-11
ok	Tc-99m	7300	1.00	S	1.0E-02	2.013E-11	S	1.0E-02	2.000E-11
ok	Tc-99	100	1.00	F	1.0E+00	3.988E-09	F	1.0E+00	4.000E-09
ok	Tc-99	365	1.00	F	8.0E-01	2.478E-09	F	8.0E-01	2.500E-09
ok	Tc-99	1825	1.00	F	8.0E-01	1.046E-09	F	8.0E-01	1.000E-09
ok	Tc-99	3650	1.00	F	8.0E-01	5.879E-10	F	8.0E-01	5.900E-10
ok	Tc-99	5475	1.00	F	8.0E-01	3.586E-10	F	8.0E-01	3.600E-10
ok	Tc-99	7300	1.00	F	8.0E-01	2.860E-10	F	8.0E-01	2.900E-10
ok	Tc-99	100	1.00	M	2.0E-01	1.680E-08	M	2.0E-01	1.700E-08
ok	Tc-99	365	1.00	M	1.0E-01	1.321E-08	M	1.0E-01	1.300E-08
ok	Tc-99	1825	1.00	M	1.0E-01	7.944E-09	M	1.0E-01	8.000E-09
ok	Tc-99	3650	1.00	M	1.0E-01	5.633E-09	M	1.0E-01	5.700E-09
ok	Tc-99	5475	1.00	M	1.0E-01	4.998E-09	M	1.0E-01	5.000E-09
ok	Tc-99	7300	1.00	M	1.0E-01	4.026E-09	M	1.0E-01	4.000E-09
ok	Tc-99	100	1.00	S	2.0E-02	4.047E-08	S	2.0E-02	4.100E-08
ok	Tc-99	365	1.00	S	1.0E-02	3.650E-08	S	1.0E-02	3.700E-08
ok	Tc-99	1825	1.00	S	1.0E-02	2.405E-08	S	1.0E-02	2.400E-08
ok	Tc-99	3650	1.00	S	1.0E-02	1.644E-08	S	1.0E-02	1.700E-08
ok	Tc-99	5475	1.00	S	1.0E-02	1.452E-08	S	1.0E-02	1.500E-08
ok	Tc-99	7300	1.00	S	1.0E-02	1.334E-08	S	1.0E-02	1.300E-08
ok	Ru-103	100	1.00	F	1.0E-01	4.168E-09	F	1.0E-01	4.200E-09
ok	Ru-103	365	1.00	F	5.0E-02	3.041E-09	F	5.0E-02	3.000E-09
ok	Ru-103	1825	1.00	F	5.0E-02	1.487E-09	F	5.0E-02	1.500E-09
ok	Ru-103	3650	1.00	F	5.0E-02	9.303E-10	F	5.0E-02	9.300E-10
ok	Ru-103	5475	1.00	F	5.0E-02	5.562E-10	F	5.0E-02	5.600E-10
ok	Ru-103	7300	1.00	F	5.0E-02	4.776E-10	F	5.0E-02	4.800E-10
ok	Ru-103	100	1.00	M	1.0E-01	1.110E-08	M	1.0E-01	1.100E-08
ok	Ru-103	365	1.00	M	5.0E-02	8.350E-09	M	5.0E-02	8.400E-09
ok	Ru-103	1825	1.00	M	5.0E-02	4.990E-09	M	5.0E-02	5.000E-09
ok	Ru-103	3650	1.00	M	5.0E-02	3.502E-09	M	5.0E-02	3.500E-09
ok	Ru-103	5475	1.00	M	5.0E-02	2.993E-09	M	5.0E-02	3.000E-09
ok	Ru-103	7300	1.00	M	5.0E-02	2.431E-09	M	5.0E-02	2.400E-09
ok	Ru-103	100	1.00	S	2.0E-02	1.299E-08	S	2.0E-02	1.300E-08
ok	Ru-103	365	1.00	S	1.0E-02	9.900E-09	S	1.0E-02	1.000E-08
ok	Ru-103	1825	1.00	S	1.0E-02	5.982E-09	S	1.0E-02	6.000E-09
ok	Ru-103	3650	1.00	S	1.0E-02	4.210E-09	S	1.0E-02	4.200E-09
ok	Ru-103	5475	1.00	S	1.0E-02	3.633E-09	S	1.0E-02	3.700E-09
ok	Ru-103	7300	1.00	S	1.0E-02	2.949E-09	S	1.0E-02	3.000E-09
ok	Ru-106	100	1.00	F	1.0E-01	7.156E-08	F	1.0E-01	7.200E-08
ok	Ru-106	365	1.00	F	5.0E-02	5.358E-08	F	5.0E-02	5.400E-08
ok	Ru-106	1825	1.00	F	5.0E-02	2.613E-08	F	5.0E-02	2.600E-08
ok	Ru-106	3650	1.00	F	5.0E-02	1.563E-08	F	5.0E-02	1.600E-08
ok	Ru-106	5475	1.00	F	5.0E-02	9.172E-09	F	5.0E-02	9.200E-09
ok	Ru-106	7300	1.00	F	5.0E-02	7.951E-09	F	5.0E-02	7.900E-09
ok	Ru-106	100	1.00	M	1.0E-01	1.374E-07	M	1.0E-01	1.400E-07
ok	Ru-106	365	1.00	M	5.0E-02	1.108E-07	M	5.0E-02	1.100E-07
ok	Ru-106	1825	1.00	M	5.0E-02	6.341E-08	M	5.0E-02	6.400E-08
ok	Ru-106	3650	1.00	M	5.0E-02	4.100E-08	M	5.0E-02	4.100E-08
ok	Ru-106	5475	1.00	M	5.0E-02	3.066E-08	M	5.0E-02	3.100E-08
ok	Ru-106	7300	1.00	M	5.0E-02	2.789E-08	M	5.0E-02	2.800E-08
ok	Ru-106	100	1.00	S	2.0E-02	2.530E-07	S	2.0E-02	2.600E-07
ok	Ru-106	365	1.00	S	1.0E-02	2.231E-07	S	1.0E-02	2.300E-07
ok	Ru-106	1825	1.00	S	1.0E-02	1.382E-07	S	1.0E-02	1.400E-07
ok	Ru-106	3650	1.00	S	1.0E-02	9.000E-08	S	1.0E-02	9.100E-08
ok	Ru-106	5475	1.00	S	1.0E-02	7.019E-08	S	1.0E-02	7.100E-08
ok	Ru-106	7300	1.00	S	1.0E-02	6.602E-08	S	1.0E-02	6.600E-08
ok	Ag-108m	100	1.00	F	1.0E-01	3.467E-08	F	1.0E-01	3.400E-08
ok	Ag-108m	365	1.00	F	5.0E-02	2.827E-08	F	5.0E-02	2.800E-08
ok	Ag-108m	1825	1.00	F	5.0E-02	1.564E-08	F	5.0E-02	1.600E-08
ok	Ag-108m	3650	1.00	F	5.0E-02	1.033E-08	F	5.0E-02	1.000E-08
ok	Ag-108m	5475	1.00	F	5.0E-02	6.895E-09	F	5.0E-02	6.900E-09
ok	Ag-108m	7300	1.00	F	5.0E-02	6.144E-09	F	5.0E-02	6.100E-09
ok	Ag-108m	100	1.00	M	1.0E-01	3.285E-08	M	1.0E-01	3.300E-08
ok	Ag-108m	365	1.00	M	5.0E-02	2.722E-08	M	5.0E-02	2.700E-08
ok	Ag-108m	1825	1.00	M	5.0E-02	1.678E-08	M	5.0E-02	1.700E-08
ok	Ag-108m	3650	1.00	M	5.0E-02	1.118E-08	M	5.0E-02	1.100E-08
ok	Ag-108m	5475	1.00	M	5.0E-02	8.669E-09	M	5.0E-02	8.600E-09
ok	Ag-108m	7300	1.00	M	5.0E-02	7.530E-09	M	5.0E-02	7.400E-09
ok	Ag-108m	100	1.00	S	2.0E-02	8.924E-08	S	2.0E-02	8.900E-08
ok	Ag-108m	365	1.00	S	1.0E-02	8.714E-08	S	1.0E-02	8.700E-08
ok	Ag-108m	1825	1.00	S	1.0E-02	6.300E-08	S	1.0E-02	6.200E-08
ok	Ag-108m	3650	1.00	S	1.0E-02	4.463E-08	S	1.0E-02	4.400E-08
ok	Ag-108m	5475	1.00	S	1.0E-02	3.945E-08	S	1.0E-02	3.900E-08
ok	Ag-108m	7300	1.00	S	1.0E-02	3.783E-08	S	1.0E-02	3.700E-08
ok	Ag-110m	100	1.00	F	1.0E-01	3.507E-08	F	1.0E-01	3.500E-08
ok	Ag-110m	365	1.00	F	5.0E-02	2.777E-08	F	5.0E-02	2.800E-08
ok	Ag-110m	1825	1.00	F	5.0E-02	1.491E-08	F	5.0E-02	1.500E-08
ok	Ag-110m	3650	1.00	F	5.0E-02	9.794E-09	F	5.0E-02	9.700E-09
ok	Ag-110m	5475	1.00	F	5.0E-02	6.369E-09	F	5.0E-02	6.300E-09
ok	Ag-110m	7300	1.00	F	5.0E-02	5.544E-09	F	5.0E-02	5.500E-09
ok	Ag-110m	100	1.00	M	1.0E-01	3.540E-08	M	1.0E-01	3.500E-08
ok	Ag-110m	365	1.00	M	5.0E-02	2.849E-08	M	5.0E-02	2.800E-08
ok	Ag-110m	1825	1.00	M	5.0E-02	1.728E-08	M	5.0E-02	1.700E-08
ok	Ag-110m	3650	1.00	M	5.0E-02	1.165E-08	M	5.0E-02	1.200E-08
ok	Ag-110m	5475	1.00	M	5.0E-02	9.184E-09	M	5.0E-02	9.200E-09
ok	Ag-110m	7300	1.00	M	5.0E-02	7.706E-09	M	5.0E-02	7.600E-09
ok	Ag-110m	100	1.00	S	2.0E-02	4.643E-08	S	2.0E-02	4.600E-08
ok	Ag-110m	365	1.00	S	1.0E-02	4.080E-08	S	1.0E-02	4.100E-08
ok	Ag-110m	1825	1.00	S	1.0E-02	2.631E-08	S	1.0E-02	2.600E-08
ok	Ag-110m	3650	1.00	S	1.0E-02	1.785E-08	S	1.0E-02	1.800E-08
ok	Ag-110m	5475	1.00	S	1.0E-02	1.460E-08	S	1.0E-02	1.500E-08
ok	Ag-110m	7300	1.00	S	1.0E-02	1.234E-08	S	1.0E-02	1.200E-08
ok	Sb-124	100	1.00	F	2.0E-01	1.226E-08	F	2.0E-01	1.200E-08
ok	Sb-124	365	1.00	F	1.0E-01	8.783E-09	F	1.0E-01	8.800E-09
ok	Sb-124	1825	1.00	F	1.0E-01	4.282E-09	F	1.0E-01	4.300E-09
ok	Sb-124	3650	1.00	F	1.0E-01	2.635E-09	F	1.0E-01	2.600E-09
ok	Sb-124	5475	1.00	F	1.0E-01	1.563E-09	F	1.0E-01	1.600E-09
ok	Sb-124	7300	1.00	F	1.0E-01	1.307E-09	F	1.0E-01	1.300E-09
ok	Sb-124	100	1.00	M	2.0E-02	3.091E-08	M	2.0E-02	3.100E-08
ok	Sb-124	365	1.00	M	1.0E-02	2.422E-08	M	1.0E-02	2.400E-08
ok	Sb-124	1825	1.00	M	1.0E-02	1.396E-08	M	1.0E-02	1.400E-08
ok	Sb-124	3650	1.00	M	1.0E-02	9.554E-09	M	1.0E-02	9.600E-09
ok	Sb-124	5475	1.00	M	1.0E-02	7.710E-09	M	1.0E-02	7.700E-09
ok	Sb-124	7300	1.00	M	1.0E-02	6.434E-09	M	1.0E-02	6.400E-09
ok	Sb-124	100	1.00	S	2.0E-02	3.905E-08	S	2.0E-02	3.900E-08
ok	Sb-124	365	1.00	S	1.0E-02	3.126E-08	S	1.0E-02	3.100E-08
ok	Sb-124	1825	1.00	S	1.0E-02	1.832E-08	S	1.0E-02	1.800E-08
ok	Sb-124	3650	1.00	S	1.0E-02	1.254E-08	S	1.0E-02	1.300E-08
ok	Sb-124	5475	1.00	S	1.0E-02	1.020E-08	S	1.0E-02	1.000E-08

ok	Sb-124	7300	1.00	S 1.0E-02	8.573E-09	S 1.0E-02	8.600E-09
ok	Sb-125	100	1.00	F 2.0E-01	8.645E-09	F 2.0E-01	8.700E-09
ok	Sb-125	365	1.00	F 1.0E-01	6.807E-09	F 1.0E-01	6.800E-09
ok	Sb-125	1825	1.00	F 1.0E-01	3.734E-09	F 1.0E-01	3.700E-09
ok	Sb-125	3650	1.00	F 1.0E-01	2.318E-09	F 1.0E-01	2.300E-09
ok	Sb-125	5475	1.00	F 1.0E-01	1.548E-09	F 1.0E-01	1.500E-09
ok	Sb-125	7300	1.00	F 1.0E-01	1.417E-09	F 1.0E-01	1.400E-09
ok	Sb-125	100	1.00	M 2.0E-02	1.999E-08	M 2.0E-02	2.000E-08
ok	Sb-125	365	1.00	M 1.0E-02	1.638E-08	M 1.0E-02	1.600E-08
ok	Sb-125	1825	1.00	M 1.0E-02	9.978E-09	M 1.0E-02	9.900E-09
ok	Sb-125	3650	1.00	M 1.0E-02	6.845E-09	M 1.0E-02	6.800E-09
ok	Sb-125	5475	1.00	M 1.0E-02	5.776E-09	M 1.0E-02	5.800E-09
ok	Sb-125	7300	1.00	M 1.0E-02	4.788E-09	M 1.0E-02	4.800E-09
ok	Sb-125	100	1.00	S 2.0E-02	4.222E-08	S 2.0E-02	4.200E-08
ok	Sb-125	365	1.00	S 1.0E-02	3.767E-08	S 1.0E-02	3.800E-08
ok	Sb-125	1825	1.00	S 1.0E-02	2.438E-08	S 1.0E-02	2.400E-08
ok	Sb-125	3650	1.00	S 1.0E-02	1.628E-08	S 1.0E-02	1.600E-08
ok	Sb-125	5475	1.00	S 1.0E-02	1.350E-08	S 1.0E-02	1.400E-08
ok	Sb-125	7300	1.00	S 1.0E-02	1.186E-08	S 1.0E-02	1.200E-08
ok	Sb-126	100	1.00	F 2.0E-01	8.803E-09	F 2.0E-01	8.800E-09
ok	Sb-126	365	1.00	F 1.0E-01	6.657E-09	F 1.0E-01	6.600E-09
ok	Sb-126	1825	1.00	F 1.0E-01	3.334E-09	F 1.0E-01	3.300E-09
ok	Sb-126	3650	1.00	F 1.0E-01	2.093E-09	F 1.0E-01	2.100E-09
ok	Sb-126	5475	1.00	F 1.0E-01	1.244E-09	F 1.0E-01	1.200E-09
ok	Sb-126	7300	1.00	F 1.0E-01	1.030E-09	F 1.0E-01	1.000E-09
ok	Sb-126	100	1.00	M 2.0E-02	1.747E-08	M 2.0E-02	1.700E-08
ok	Sb-126	365	1.00	M 1.0E-02	1.347E-08	M 1.0E-02	1.300E-08
ok	Sb-126	1825	1.00	M 1.0E-02	7.490E-09	M 1.0E-02	7.400E-09
ok	Sb-126	3650	1.00	M 1.0E-02	5.090E-09	M 1.0E-02	5.100E-09
ok	Sb-126	5475	1.00	M 1.0E-02	3.541E-09	M 1.0E-02	3.500E-09
ok	Sb-126	7300	1.00	M 1.0E-02	2.863E-09	M 1.0E-02	2.800E-09
ok	Sb-126	100	1.00	S 2.0E-02	1.899E-08	S 2.0E-02	1.900E-08
ok	Sb-126	365	1.00	S 1.0E-02	1.470E-08	S 1.0E-02	1.500E-08
ok	Sb-126	1825	1.00	S 1.0E-02	8.245E-09	S 1.0E-02	8.200E-09
ok	Sb-126	3650	1.00	S 1.0E-02	5.039E-09	S 1.0E-02	5.000E-09
ok	Sb-126	5475	1.00	S 1.0E-02	4.018E-09	S 1.0E-02	4.000E-09
ok	Sb-126	7300	1.00	S 1.0E-02	3.244E-09	S 1.0E-02	3.200E-09
ok	Sb-127	100	1.00	F 2.0E-01	5.066E-09	F 2.0E-01	5.100E-09
ok	Sb-127	365	1.00	F 1.0E-01	3.533E-09	F 1.0E-01	3.500E-09
ok	Sb-127	1825	1.00	F 1.0E-01	1.596E-09	F 1.0E-01	1.600E-09
ok	Sb-127	3650	1.00	F 1.0E-01	9.699E-10	F 1.0E-01	9.700E-10
ok	Sb-127	5475	1.00	F 1.0E-01	5.255E-10	F 1.0E-01	5.200E-10
ok	Sb-127	7300	1.00	F 1.0E-01	4.338E-10	F 1.0E-01	4.300E-10
ok	Sb-127	100	1.00	M 2.0E-02	1.031E-08	M 2.0E-02	1.000E-08
ok	Sb-127	365	1.00	M 1.0E-02	7.360E-09	M 1.0E-02	7.300E-09
ok	Sb-127	1825	1.00	M 1.0E-02	3.889E-09	M 1.0E-02	3.900E-09
ok	Sb-127	3650	1.00	M 1.0E-02	2.700E-09	M 1.0E-02	2.700E-09
ok	Sb-127	5475	1.00	M 1.0E-02	2.109E-09	M 1.0E-02	2.100E-09
ok	Sb-127	7300	1.00	M 1.0E-02	1.687E-09	M 1.0E-02	1.700E-09
ok	Sb-127	100	1.00	S 2.0E-02	1.110E-08	S 2.0E-02	1.100E-08
ok	Sb-127	365	1.00	S 1.0E-02	7.967E-09	S 1.0E-02	7.900E-09
ok	Sb-127	1825	1.00	S 1.0E-02	4.252E-09	S 1.0E-02	4.200E-09
ok	Sb-127	3650	1.00	S 1.0E-02	2.968E-09	S 1.0E-02	3.000E-09
ok	Sb-127	5475	1.00	S 1.0E-02	2.348E-09	S 1.0E-02	2.300E-09
ok	Sb-127	7300	1.00	S 1.0E-02	1.878E-09	S 1.0E-02	1.900E-09

ok	Te-125m	100	1.00	F 6.0E-01	6.195E-09	F 6.0E-01	6.200E-09
ok	Te-125m	365	1.00	F 3.0E-01	4.183E-09	F 3.0E-01	4.200E-09
ok	Te-125m	1825	1.00	F 3.0E-01	2.029E-09	F 3.0E-01	2.000E-09
ok	Te-125m	3650	1.00	F 3.0E-01	1.093E-09	F 3.0E-01	1.100E-09
ok	Te-125m	5475	1.00	F 3.0E-01	6.139E-10	F 3.0E-01	6.100E-10
ok	Te-125m	7300	1.00	F 3.0E-01	5.103E-10	F 3.0E-01	5.100E-10
ok	Te-125m	100	1.00	M 2.0E-01	1.444E-08	M 2.0E-01	1.500E-08
ok	Te-125m	365	1.00	M 1.0E-01	1.082E-08	M 1.0E-01	1.100E-08
ok	Te-125m	1825	1.00	M 1.0E-01	6.526E-09	M 1.0E-01	6.600E-09
ok	Te-125m	3650	1.00	M 1.0E-01	4.715E-09	M 1.0E-01	4.800E-09
ok	Te-125m	5475	1.00	M 1.0E-01	4.268E-09	M 1.0E-01	4.300E-09
ok	Te-125m	7300	1.00	M 1.0E-01	3.367E-09	M 1.0E-01	3.400E-09
ok	Te-125m	100	1.00	S 2.0E-02	1.643E-08	S 2.0E-02	1.700E-08
ok	Te-125m	365	1.00	S 1.0E-02	1.270E-08	S 1.0E-02	1.300E-08
ok	Te-125m	1825	1.00	S 1.0E-02	7.776E-09	S 1.0E-02	7.800E-09
ok	Te-125m	3650	1.00	S 1.0E-02	5.701E-09	S 1.0E-02	5.800E-09
ok	Te-125m	5475	1.00	S 1.0E-02	5.234E-09	S 1.0E-02	5.300E-09
ok	Te-125m	7300	1.00	S 1.0E-02	4.131E-09	S 1.0E-02	4.200E-09
ok	Te-127m	100	1.00	F 6.0E-01	2.081E-08	F 6.0E-01	2.100E-08
ok	Te-127m	365	1.00	F 3.0E-01	1.395E-08	F 3.0E-01	1.400E-08
ok	Te-127m	1825	1.00	F 3.0E-01	6.534E-09	F 3.0E-01	6.500E-09
ok	Te-127m	3650	1.00	F 3.0E-01	3.463E-09	F 3.0E-01	3.500E-09
ok	Te-127m	5475	1.00	F 3.0E-01	1.954E-09	F 3.0E-01	2.000E-09
ok	Te-127m	7300	1.00	F 3.0E-01	1.542E-09	F 3.0E-01	1.500E-09
ok	Te-127m	100	1.00	M 2.0E-01	3.505E-08	M 2.0E-01	3.500E-08
ok	Te-127m	365	1.00	M 1.0E-01	2.623E-08	M 1.0E-01	2.600E-08
ok	Te-127m	1825	1.00	M 1.0E-01	1.536E-08	M 1.0E-01	1.500E-08
ok	Te-127m	3650	1.00	M 1.0E-01	1.065E-08	M 1.0E-01	1.100E-08
ok	Te-127m	5475	1.00	M 1.0E-01	9.176E-09	M 1.0E-01	9.200E-09
ok	Te-127m	7300	1.00	M 1.0E-01	7.402E-09	M 1.0E-01	7.400E-09
ok	Te-127m	100	1.00	S 2.0E-02	4.080E-08	S 2.0E-02	4.100E-08
ok	Te-127m	365	1.00	S 1.0E-02	3.240E-08	S 1.0E-02	3.300E-08
ok	Te-127m	1825	1.00	S 1.0E-02	1.950E-08	S 1.0E-02	2.000E-08
ok	Te-127m	3650	1.00	S 1.0E-02	1.373E-08	S 1.0E-02	1.400E-08
ok	Te-127m	5475	1.00	S 1.0E-02	1.198E-08	S 1.0E-02	1.200E-08
ok	Te-127m	7300	1.00	S 1.0E-02	9.786E-09	S 1.0E-02	9.800E-09
ok	Te-127	100	1.00	F 6.0E-01	4.289E-10	F 6.0E-01	4.300E-10
ok	Te-127	365	1.00	F 3.0E-01	3.224E-10	F 3.0E-01	3.200E-10
ok	Te-127	1825	1.00	F 3.0E-01	1.374E-10	F 3.0E-01	1.400E-10
ok	Te-127	3650	1.00	F 3.0E-01	8.532E-11	F 3.0E-01	8.500E-11
ok	Te-127	5475	1.00	F 3.0E-01	4.564E-11	F 3.0E-01	4.500E-11
ok	Te-127	7300	1.00	F 3.0E-01	3.908E-11	F 3.0E-01	3.900E-11
ok	Te-127	100	1.00	M 2.0E-01	1.045E-09	M 2.0E-01	1.000E-09
ok	Te-127	365	1.00	M 1.0E-01	7.320E-10	M 1.0E-01	7.300E-10
ok	Te-127	1825	1.00	M 1.0E-01	3.564E-10	M 1.0E-01	3.600E-10
ok	Te-127	3650	1.00	M 1.0E-01	2.419E-10	M 1.0E-01	2.400E-10
ok	Te-127	5475	1.00	M 1.0E-01	1.587E-10	M 1.0E-01	1.600E-10
ok	Te-127	7300	1.00	M 1.0E-01	1.267E-10	M 1.0E-01	1.300E-10
ok	Te-127	100	1.00	S 2.0E-02	1.171E-09	S 2.0E-02	1.200E-09
ok	Te-127	365	1.00	S 1.0E-02	7.958E-10	S 1.0E-02	7.900E-10
ok	Te-127	1825	1.00	S 1.0E-02	3.883E-10	S 1.0E-02	3.900E-10
ok	Te-127	3650	1.00	S 1.0E-02	2.639E-10	S 1.0E-02	2.600E-10
ok	Te-127	5475	1.00	S 1.0E-02	1.747E-10	S 1.0E-02	1.700E-10
ok	Te-127	7300	1.00	S 1.0E-02	1.395E-10	S 1.0E-02	1.400E-10
ok	I-123	100	0.00	V 1.0E+00	2.061E-09	V 1.0E+00	2.100E-09

ok	I-123	365	0.00	V 1.0E+00	1.835E-09	V 1.0E+00	1.800E-09
ok	I-123	1825	0.00	V 1.0E+00	9.948E-10	V 1.0E+00	1.000E-09
ok	I-123	3650	0.00	V 1.0E+00	4.677E-10	V 1.0E+00	4.700E-10
ok	I-123	5475	0.00	V 1.0E+00	3.111E-10	V 1.0E+00	3.200E-10
ok	I-123	7300	0.00	V 1.0E+00	2.031E-10	V 1.0E+00	2.100E-10
ok	I-123	100	1.00	F 1.0E+00	8.853E-10	F 1.0E+00	8.700E-10
ok	I-123	365	1.00	F 1.0E+00	8.029E-10	F 1.0E+00	7.900E-10
ok	I-123	1825	1.00	F 1.0E+00	3.841E-10	F 1.0E+00	3.800E-10
ok	I-123	3650	1.00	F 1.0E+00	1.812E-10	F 1.0E+00	1.800E-10
ok	I-123	5475	1.00	F 1.0E+00	1.112E-10	F 1.0E+00	1.100E-10
ok	I-123	7300	1.00	F 1.0E+00	7.502E-11	F 1.0E+00	7.400E-11
ok	I-123	100	1.00	M 2.0E-01	5.394E-10	M 2.0E-01	5.300E-10
ok	I-123	365	1.00	M 1.0E-01	3.944E-10	M 1.0E-01	3.900E-10
ok	I-123	1825	1.00	M 1.0E-01	1.988E-10	M 1.0E-01	2.000E-10
ok	I-123	3650	1.00	M 1.0E-01	1.225E-10	M 1.0E-01	1.200E-10
ok	I-123	5475	1.00	M 1.0E-01	8.275E-11	M 1.0E-01	8.200E-11
ok	I-123	7300	1.00	M 1.0E-01	6.428E-11	M 1.0E-01	6.400E-11
ok	I-125	100	0.00	V 1.0E+00	4.761E-08	V 1.0E+00	4.700E-08
ok	I-125	365	0.00	V 1.0E+00	5.256E-08	V 1.0E+00	5.200E-08
ok	I-125	1825	0.00	V 1.0E+00	3.805E-08	V 1.0E+00	3.700E-08
ok	I-125	3650	0.00	V 1.0E+00	2.884E-08	V 1.0E+00	2.800E-08
ok	I-125	5475	0.00	V 1.0E+00	2.022E-08	V 1.0E+00	2.000E-08
ok	I-125	7300	0.00	V 1.0E+00	1.398E-08	V 1.0E+00	1.400E-08
ok	I-125	100	1.00	F 1.0E+00	2.051E-08	F 1.0E+00	2.000E-08
ok	I-125	365	1.00	F 1.0E+00	2.313E-08	F 1.0E+00	2.300E-08
ok	I-125	1825	1.00	F 1.0E+00	1.479E-08	F 1.0E+00	1.500E-08
ok	I-125	3650	1.00	F 1.0E+00	1.127E-08	F 1.0E+00	1.100E-08
ok	I-125	5475	1.00	F 1.0E+00	7.281E-09	F 1.0E+00	7.200E-09
ok	I-125	7300	1.00	F 1.0E+00	5.223E-09	F 1.0E+00	5.100E-09
ok	I-125	100	1.00	M 2.0E-01	7.013E-09	M 2.0E-01	6.900E-09
ok	I-125	365	1.00	M 1.0E-01	5.684E-09	M 1.0E-01	5.600E-09
ok	I-125	1825	1.00	M 1.0E-01	3.670E-09	M 1.0E-01	3.600E-09
ok	I-125	3650	1.00	M 1.0E-01	2.691E-09	M 1.0E-01	2.600E-09
ok	I-125	5475	1.00	M 1.0E-01	1.870E-09	M 1.0E-01	1.800E-09
ok	I-125	7300	1.00	M 1.0E-01	1.381E-09	M 1.0E-01	1.400E-09
ok	I-129	100	0.00	V 1.0E+00	1.670E-07	V 1.0E+00	1.700E-07
ok	I-129	365	0.00	V 1.0E+00	1.954E-07	V 1.0E+00	2.000E-07
ok	I-129	1825	0.00	V 1.0E+00	1.566E-07	V 1.0E+00	1.600E-07
ok	I-129	3650	0.00	V 1.0E+00	1.707E-07	V 1.0E+00	1.700E-07
ok	I-129	5475	0.00	V 1.0E+00	1.266E-07	V 1.0E+00	1.300E-07
ok	I-129	7300	0.00	V 1.0E+00	9.601E-08	V 1.0E+00	9.600E-08
ok	I-129	100	1.00	F 1.0E+00	7.191E-08	F 1.0E+00	7.200E-08
ok	I-129	365	1.00	F 1.0E+00	8.599E-08	F 1.0E+00	8.600E-08
ok	I-129	1825	1.00	F 1.0E+00	6.087E-08	F 1.0E+00	6.100E-08
ok	I-129	3650	1.00	F 1.0E+00	6.671E-08	F 1.0E+00	6.700E-08
ok	I-129	5475	1.00	F 1.0E+00	4.560E-08	F 1.0E+00	4.600E-08
ok	I-129	7300	1.00	F 1.0E+00	3.587E-08	F 1.0E+00	3.600E-08
ok	I-129	100	1.00	M 2.0E-01	3.641E-08	M 2.0E-01	3.600E-08
ok	I-129	365	1.00	M 1.0E-01	3.244E-08	M 1.0E-01	3.300E-08
ok	I-129	1825	1.00	M 1.0E-01	2.414E-08	M 1.0E-01	2.400E-08
ok	I-129	3650	1.00	M 1.0E-01	2.382E-08	M 1.0E-01	2.400E-08
ok	I-129	5475	1.00	M 1.0E-01	1.852E-08	M 1.0E-01	1.900E-08
ok	I-129	7300	1.00	M 1.0E-01	1.500E-08	M 1.0E-01	1.500E-08
ok	I-131	100	0.00	V 1.0E+00	1.674E-07	V 1.0E+00	1.700E-07
ok	I-131	365	0.00	V 1.0E+00	1.628E-07	V 1.0E+00	1.600E-07

ok	I-131	1825	0.00	V 1.0E+00	9.421E-08	V 1.0E+00	9.400E-08
ok	I-131	3650	0.00	V 1.0E+00	4.765E-08	V 1.0E+00	4.800E-08
ok	I-131	5475	0.00	V 1.0E+00	3.116E-08	V 1.0E+00	3.100E-08
ok	I-131	7300	0.00	V 1.0E+00	1.979E-08	V 1.0E+00	2.000E-08
ok	I-131	100	1.00	F 1.0E+00	7.209E-08	F 1.0E+00	7.200E-08
ok	I-131	365	1.00	F 1.0E+00	7.159E-08	F 1.0E+00	7.200E-08
ok	I-131	1825	1.00	F 1.0E+00	3.661E-08	F 1.0E+00	3.700E-08
ok	I-131	3650	1.00	F 1.0E+00	1.861E-08	F 1.0E+00	1.900E-08
ok	I-131	5475	1.00	F 1.0E+00	1.121E-08	F 1.0E+00	1.100E-08
ok	I-131	7300	1.00	F 1.0E+00	7.389E-09	F 1.0E+00	7.400E-09
ok	I-131	100	1.00	M 2.0E-01	2.214E-08	M 2.0E-01	2.200E-08
ok	I-131	365	1.00	M 1.0E-01	1.544E-08	M 1.0E-01	1.500E-08
ok	I-131	1825	1.00	M 1.0E-01	8.186E-09	M 1.0E-01	8.200E-09
ok	I-131	3650	1.00	M 1.0E-01	4.738E-09	M 1.0E-01	4.700E-09
ok	I-131	5475	1.00	M 1.0E-01	3.365E-09	M 1.0E-01	3.400E-09
ok	I-131	7300	1.00	M 1.0E-01	2.437E-09	M 1.0E-01	2.400E-09
-->	I-132	100	0.00	V 1.0E+00	2.578E-09	V 1.0E+00	2.800E-09
ok	I-132	365	0.00	V 1.0E+00	2.213E-09	V 1.0E+00	2.300E-09
-->	I-132	1825	0.00	V 1.0E+00	1.187E-09	V 1.0E+00	1.300E-09
-->	I-132	3650	0.00	V 1.0E+00	5.711E-10	V 1.0E+00	6.400E-10
-->	I-132	5475	0.00	V 1.0E+00	3.808E-10	V 1.0E+00	4.300E-10
-->	I-132	7300	0.00	V 1.0E+00	2.574E-10	V 1.0E+00	3.100E-10
ok	I-132	100	1.00	F 1.0E+00	1.127E-09	F 1.0E+00	1.100E-09
ok	I-132	365	1.00	F 1.0E+00	9.655E-10	F 1.0E+00	9.600E-10
ok	I-132	1825	1.00	F 1.0E+00	4.547E-10	F 1.0E+00	4.500E-10
ok	I-132	3650	1.00	F 1.0E+00	2.199E-10	F 1.0E+00	2.200E-10
ok	I-132	5475	1.00	F 1.0E+00	1.352E-10	F 1.0E+00	1.300E-10
ok	I-132	7300	1.00	F 1.0E+00	9.396E-11	F 1.0E+00	9.400E-11
ok	I-132	100	1.00	M 2.0E-01	9.977E-10	M 2.0E-01	9.900E-10
ok	I-132	365	1.00	M 1.0E-01	7.323E-10	M 1.0E-01	7.300E-10
ok	I-132	1825	1.00	M 1.0E-01	3.607E-10	M 1.0E-01	3.600E-10
ok	I-132	3650	1.00	M 1.0E-01	2.231E-10	M 1.0E-01	2.200E-10
ok	I-132	5475	1.00	M 1.0E-01	1.428E-10	M 1.0E-01	1.400E-10
ok	I-132	7300	1.00	M 1.0E-01	1.141E-10	M 1.0E-01	1.100E-10
ok	I-133	100	0.00	V 1.0E+00	4.519E-08	V 1.0E+00	4.500E-08
ok	I-133	365	0.00	V 1.0E+00	4.054E-08	V 1.0E+00	4.100E-08
ok	I-133	1825	0.00	V 1.0E+00	2.146E-08	V 1.0E+00	2.100E-08
ok	I-133	3650	0.00	V 1.0E+00	9.683E-09	V 1.0E+00	9.700E-09
ok	I-133	5475	0.00	V 1.0E+00	6.263E-09	V 1.0E+00	6.300E-09
ok	I-133	7300	0.00	V 1.0E+00	3.940E-09	V 1.0E+00	4.000E-09
ok	I-133	100	1.00	F 1.0E+00	1.941E-08	F 1.0E+00	1.900E-08
ok	I-133	365	1.00	F 1.0E+00	1.777E-08	F 1.0E+00	1.800E-08
ok	I-133	1825	1.00	F 1.0E+00	8.311E-09	F 1.0E+00	8.300E-09
ok	I-133	3650	1.00	F 1.0E+00	3.768E-09	F 1.0E+00	3.800E-09
ok	I-133	5475	1.00	F 1.0E+00	2.248E-09	F 1.0E+00	2.200E-09
ok	I-133	7300	1.00	F 1.0E+00	1.466E-09	F 1.0E+00	1.500E-09
ok	I-133	100	1.00	M 2.0E-01	6.587E-09	M 2.0E-01	6.600E-09
ok	I-133	365	1.00	M 1.0E-01	4.385E-09	M 1.0E-01	4.400E-09
ok	I-133	1825	1.00	M 1.0E-01	2.074E-09	M 1.0E-01	2.100E-09
ok	I-133	3650	1.00	M 1.0E-01	1.157E-09	M 1.0E-01	1.200E-09
ok	I-133	5475	1.00	M 1.0E-01	7.386E-10	M 1.0E-01	7.400E-10
ok	I-133	7300	1.00	M 1.0E-01	5.547E-10	M 1.0E-01	5.500E-10
-->	I-134	100	0.00	V 1.0E+00	6.876E-10	V 1.0E+00	8.700E-10
-->	I-134	365	0.00	V 1.0E+00	5.574E-10	V 1.0E+00	6.900E-10
-->	I-134	1825	0.00	V 1.0E+00	3.026E-10	V 1.0E+00	3.900E-10

-->	I-134	3650	0.00	V	1.0E+00	1.594E-10	V	1.0E+00	2.200E-10
-->	I-134	5475	0.00	V	1.0E+00	1.085E-10	V	1.0E+00	1.600E-10
-->	I-134	7300	0.00	V	1.0E+00	7.966E-11	V	1.0E+00	1.500E-10
ok	I-134	100	1.00	F	1.0E+00	4.641E-10	F	1.0E+00	4.600E-10
ok	I-134	365	1.00	F	1.0E+00	3.707E-10	F	1.0E+00	3.700E-10
ok	I-134	1825	1.00	F	1.0E+00	1.781E-10	F	1.0E+00	1.800E-10
ok	I-134	3650	1.00	F	1.0E+00	9.750E-11	F	1.0E+00	9.700E-11
ok	I-134	5475	1.00	F	1.0E+00	5.933E-11	F	1.0E+00	5.900E-11
ok	I-134	7300	1.00	F	1.0E+00	4.521E-11	F	1.0E+00	4.500E-11
ok	I-134	100	1.00	M	2.0E-01	4.812E-10	M	2.0E-01	4.800E-10
ok	I-134	365	1.00	M	1.0E-01	3.454E-10	M	1.0E-01	3.400E-10
ok	I-134	1825	1.00	M	1.0E-01	1.682E-10	M	1.0E-01	1.700E-10
-->	I-134	3650	1.00	M	1.0E-01	1.053E-10	M	1.0E-01	1.000E-10
ok	I-134	5475	1.00	M	1.0E-01	6.752E-11	M	1.0E-01	6.700E-11
ok	I-134	7300	1.00	M	1.0E-01	5.478E-11	M	1.0E-01	5.400E-11
ok	I-135	100	0.00	V	1.0E+00	9.554E-09	V	1.0E+00	9.700E-09
ok	I-135	365	0.00	V	1.0E+00	8.424E-09	V	1.0E+00	8.500E-09
ok	I-135	1825	0.00	V	1.0E+00	4.482E-09	V	1.0E+00	4.500E-09
ok	I-135	3650	0.00	V	1.0E+00	2.060E-09	V	1.0E+00	2.100E-09
ok	I-135	5475	0.00	V	1.0E+00	1.352E-09	V	1.0E+00	1.400E-09
-->	I-135	7300	0.00	V	1.0E+00	8.737E-10	V	1.0E+00	9.200E-10
ok	I-135	100	1.00	F	1.0E+00	4.104E-09	F	1.0E+00	4.100E-09
ok	I-135	365	1.00	F	1.0E+00	3.675E-09	F	1.0E+00	3.700E-09
ok	I-135	1825	1.00	F	1.0E+00	1.726E-09	F	1.0E+00	1.700E-09
ok	I-135	3650	1.00	F	1.0E+00	7.974E-10	F	1.0E+00	7.900E-10
ok	I-135	5475	1.00	F	1.0E+00	4.828E-10	F	1.0E+00	4.800E-10
ok	I-135	7300	1.00	F	1.0E+00	3.229E-10	F	1.0E+00	3.200E-10
ok	I-135	100	1.00	M	2.0E-01	2.249E-09	M	2.0E-01	2.200E-09
ok	I-135	365	1.00	M	1.0E-01	1.614E-09	M	1.0E-01	1.600E-09
ok	I-135	1825	1.00	M	1.0E-01	7.875E-10	M	1.0E-01	7.800E-10
ok	I-135	3650	1.00	M	1.0E-01	4.732E-10	M	1.0E-01	4.700E-10
ok	I-135	5475	1.00	M	1.0E-01	3.017E-10	M	1.0E-01	3.000E-10
ok	I-135	7300	1.00	M	1.0E-01	2.369E-10	M	1.0E-01	2.400E-10
ok	Cs-134	100	1.00	F	1.0E+00	1.128E-08	F	1.0E+00	1.100E-08
ok	Cs-134	365	1.00	F	1.0E+00	7.378E-09	F	1.0E+00	7.300E-09
ok	Cs-134	1825	1.00	F	1.0E+00	5.234E-09	F	1.0E+00	5.200E-09
ok	Cs-134	3650	1.00	F	1.0E+00	5.342E-09	F	1.0E+00	5.300E-09
ok	Cs-134	5475	1.00	F	1.0E+00	6.368E-09	F	1.0E+00	6.300E-09
ok	Cs-134	7300	1.00	F	1.0E+00	6.685E-09	F	1.0E+00	6.600E-09
ok	Cs-134	100	1.00	M	2.0E-01	3.177E-08	M	2.0E-01	3.200E-08
ok	Cs-134	365	1.00	M	1.0E-01	2.581E-08	M	1.0E-01	2.600E-08
ok	Cs-134	1825	1.00	M	1.0E-01	1.616E-08	M	1.0E-01	1.600E-08
ok	Cs-134	3650	1.00	M	1.0E-01	1.166E-08	M	1.0E-01	1.200E-08
ok	Cs-134	5475	1.00	M	1.0E-01	1.051E-08	M	1.0E-01	1.100E-08
ok	Cs-134	7300	1.00	M	1.0E-01	9.172E-09	M	1.0E-01	9.100E-09
ok	Cs-136	100	1.00	F	1.0E+00	7.253E-09	F	1.0E+00	7.200E-09
ok	Cs-136	365	1.00	F	1.0E+00	5.260E-09	F	1.0E+00	5.200E-09
ok	Cs-136	1825	1.00	F	1.0E+00	2.913E-09	F	1.0E+00	2.900E-09
ok	Cs-136	3650	1.00	F	1.0E+00	1.989E-09	F	1.0E+00	2.000E-09
ok	Cs-136	5475	1.00	F	1.0E+00	1.376E-09	F	1.0E+00	1.400E-09
ok	Cs-136	7300	1.00	F	1.0E+00	1.232E-09	F	1.0E+00	1.200E-09
ok	Cs-136	100	1.00	M	2.0E-01	1.346E-08	M	2.0E-01	1.300E-08
ok	Cs-136	365	1.00	M	1.0E-01	1.036E-08	M	1.0E-01	1.000E-08
ok	Cs-136	1825	1.00	M	1.0E-01	5.992E-09	M	1.0E-01	5.900E-09
ok	Cs-136	3650	1.00	M	1.0E-01	3.733E-09	M	1.0E-01	3.700E-09
ok	Cs-136	5475	1.00	M	1.0E-01	3.141E-09	M	1.0E-01	3.100E-09
ok	Cs-136	7300	1.00	M	1.0E-01	2.512E-09	M	1.0E-01	2.500E-09
ok	Cs-137	100	1.00	F	1.0E+00	8.764E-09	F	1.0E+00	8.800E-09
ok	Cs-137	365	1.00	F	1.0E+00	5.421E-09	F	1.0E+00	5.400E-09
ok	Cs-137	1825	1.00	F	1.0E+00	3.663E-09	F	1.0E+00	3.600E-09
ok	Cs-137	3650	1.00	F	1.0E+00	3.747E-09	F	1.0E+00	3.700E-09
ok	Cs-137	5475	1.00	F	1.0E+00	4.458E-09	F	1.0E+00	4.400E-09
ok	Cs-137	7300	1.00	F	1.0E+00	4.673E-09	F	1.0E+00	4.600E-09
ok	Cs-137	100	1.00	M	2.0E-01	3.589E-08	M	2.0E-01	3.600E-08
ok	Cs-137	365	1.00	M	1.0E-01	2.909E-08	M	1.0E-01	2.900E-08
ok	Cs-137	1825	1.00	M	1.0E-01	1.777E-08	M	1.0E-01	1.800E-08
ok	Cs-137	3650	1.00	M	1.0E-01	1.264E-08	M	1.0E-01	1.300E-08
ok	Cs-137	5475	1.00	M	1.0E-01	1.118E-08	M	1.0E-01	1.100E-08
ok	Cs-137	7300	1.00	M	1.0E-01	9.690E-09	M	1.0E-01	9.700E-09
ok	Ba-133	100	1.00	F	6.0E-01	1.116E-08	F	6.0E-01	1.100E-08
ok	Ba-133	365	1.00	F	3.0E-01	4.485E-09	F	3.0E-01	4.500E-09
ok	Ba-133	1825	1.00	F	3.0E-01	2.640E-09	F	3.0E-01	2.600E-09
ok	Ba-133	3650	1.00	F	3.0E-01	3.687E-09	F	3.0E-01	3.700E-09
ok	Ba-133	5475	1.00	F	3.0E-01	5.955E-09	F	3.0E-01	6.000E-09
ok	Ba-133	9125	1.00	F	2.0E-01	1.522E-09	F	2.0E-01	1.500E-09
ok	Ba-133	100	1.00	M	2.0E-01	1.458E-08	M	2.0E-01	1.500E-08
ok	Ba-133	365	1.00	M	1.0E-01	1.027E-08	M	1.0E-01	1.000E-08
ok	Ba-133	1825	1.00	M	1.0E-01	6.401E-09	M	1.0E-01	6.400E-09
ok	Ba-133	3650	1.00	M	1.0E-01	5.099E-09	M	1.0E-01	5.100E-09
ok	Ba-133	5475	1.00	M	1.0E-01	5.401E-09	M	1.0E-01	5.400E-09
ok	Ba-133	9125	1.00	M	1.0E-01	3.145E-09	M	1.0E-01	3.100E-09
ok	Ba-133	100	1.00	S	2.0E-02	3.186E-08	S	2.0E-02	3.200E-08
ok	Ba-133	365	1.00	S	1.0E-02	2.927E-08	S	1.0E-02	2.900E-08
ok	Ba-133	1825	1.00	S	1.0E-02	1.986E-08	S	1.0E-02	2.000E-08
ok	Ba-133	3650	1.00	S	1.0E-02	1.346E-08	S	1.0E-02	1.300E-08
ok	Ba-133	5475	1.00	S	1.0E-02	1.135E-08	S	1.0E-02	1.100E-08
ok	Ba-133	9125	1.00	S	1.0E-02	1.031E-08	S	1.0E-02	1.000E-08
ok	Ba-140	100	1.00	F	6.0E-01	1.342E-08	F	6.0E-01	1.300E-08
ok	Ba-140	365	1.00	F	3.0E-01	7.830E-09	F	3.0E-01	7.800E-09
ok	Ba-140	1825	1.00	F	3.0E-01	3.570E-09	F	3.0E-01	3.600E-09
ok	Ba-140	3650	1.00	F	3.0E-01	2.413E-09	F	3.0E-01	2.400E-09
ok	Ba-140	5475	1.00	F	3.0E-01	1.589E-09	F	3.0E-01	1.600E-09
ok	Ba-140	9125	1.00	F	2.0E-01	1.031E-09	F	2.0E-01	1.000E-09
ok	Ba-140	100	1.00	M	2.0E-01	2.671E-08	M	2.0E-01	2.700E-08
ok	Ba-140	365	1.00	M	1.0E-01	1.959E-08	M	1.0E-01	2.000E-08
ok	Ba-140	1825	1.00	M	1.0E-01	1.099E-08	M	1.0E-01	1.100E-08
ok	Ba-140	3650	1.00	M	1.0E-01	7.663E-09	M	1.0E-01	7.600E-09
ok	Ba-140	5475	1.00	M	1.0E-01	6.270E-09	M	1.0E-01	6.200E-09
ok	Ba-140	9125	1.00	M	1.0E-01	5.073E-09	M	1.0E-01	5.100E-09
ok	Ba-140	100	1.00	S	2.0E-02	2.896E-08	S	2.0E-02	2.900E-08
ok	Ba-140	365	1.00	S	1.0E-02	2.182E-08	S	1.0E-02	2.200E-08
ok	Ba-140	1825	1.00	S	1.0E-02	1.241E-08	S	1.0E-02	1.200E-08
ok	Ba-140	3650	1.00	S	1.0E-02	8.653E-09	S	1.0E-02	8.600E-09
ok	Ba-140	5475	1.00	S	1.0E-02	7.146E-09	S	1.0E-02	7.100E-09
ok	Ba-140	9125	1.00	S	1.0E-02	5.837E-09	S	1.0E-02	5.800E-09
<<<<	La-140	100	1.00	F	1.0E-02	5.777E-09	F	5.0E-03	5.800E-09
<<<<	La-140	365	1.00	F	1.0E-03	4.209E-09	F	5.0E-04	5.800E-09
<<<<	La-140	1825	1.00	F	1.0E-03	1.994E-09	F	5.0E-04	5.800E-09
<<<<	La-140	3650	1.00	F	1.0E-03	1.240E-09	F	5.0E-04	5.800E-09
<<<<	La-140	5475	1.00	F	1.0E-03	6.931E-10	F	5.0E-04	5.800E-09

<<<<	La-140	7300	1.00	F	1.0E-03	5.693E-10	F	5.0E-04	5.800E-09
<<<<	La-140	100	1.00	M	1.0E-02	8.788E-09	M	5.0E-03	5.800E-09
<<<<	La-140	365	1.00	M	1.0E-03	6.364E-09	M	5.0E-04	5.800E-09
<<<<	La-140	1825	1.00	M	1.0E-03	3.149E-09	M	5.0E-04	5.800E-09
<<<<	La-140	3650	1.00	M	1.0E-03	2.045E-09	M	5.0E-04	5.800E-09
<<<<	La-140	5475	1.00	M	1.0E-03	1.320E-09	M	5.0E-04	5.800E-09
<<<<	La-140	7300	1.00	M	1.0E-03	1.076E-09	M	5.0E-04	5.800E-09
<<<<	Ce-141	100	1.00	F	1.0E-03	1.121E-08	F	5.0E-03	5.800E-09
ok	Ce-141	365	1.00	F	5.0E-04	7.259E-09	F	5.0E-04	7.300E-09
ok	Ce-141	1825	1.00	F	5.0E-04	3.531E-09	F	5.0E-04	3.500E-09
ok	Ce-141	3650	1.00	F	5.0E-04	1.970E-09	F	5.0E-04	2.000E-09
ok	Ce-141	5475	1.00	F	5.0E-04	1.154E-09	F	5.0E-04	1.200E-09
ok	Ce-141	7300	1.00	F	5.0E-04	9.382E-10	F	5.0E-04	9.300E-10
<<<<	Ce-141	100	1.00	M	1.0E-03	1.427E-08	M	5.0E-03	9.300E-10
ok	Ce-141	365	1.00	M	5.0E-04	1.074E-08	M	5.0E-04	1.100E-08
ok	Ce-141	1825	1.00	M	5.0E-04	6.324E-09	M	5.0E-04	6.300E-09
ok	Ce-141	3650	1.00	M	5.0E-04	4.549E-09	M	5.0E-04	4.600E-09
ok	Ce-141	5475	1.00	M	5.0E-04	4.047E-09	M	5.0E-04	4.100E-09
ok	Ce-141	7300	1.00	M	5.0E-04	3.198E-09	M	5.0E-04	3.200E-09
<<<<	Ce-141	100	1.00	S	1.0E-03	1.545E-08	S	5.0E-03	3.200E-09
ok	Ce-141	365	1.00	S	5.0E-04	1.186E-08	S	5.0E-04	1.200E-08
ok	Ce-141	1825	1.00	S	5.0E-04	7.108E-09	S	5.0E-04	7.100E-09
ok	Ce-141	3650	1.00	S	5.0E-04	5.219E-09	S	5.0E-04	5.300E-09
ok	Ce-141	5475	1.00	S	5.0E-04	4.741E-09	S	5.0E-04	4.800E-09
ok	Ce-141	7300	1.00	S	5.0E-04	3.746E-09	S	5.0E-04	3.800E-09
<<<<	Ce-144	100	1.00	F	1.0E-03	3.573E-07	F	5.0E-03	3.800E-09
ok	Ce-144	365	1.00	F	5.0E-04	2.688E-07	F	5.0E-04	2.700E-07
ok	Ce-144	1825	1.00	F	5.0E-04	1.348E-07	F	5.0E-04	1.400E-07
ok	Ce-144	3650	1.00	F	5.0E-04	7.807E-08	F	5.0E-04	7.800E-08
ok	Ce-144	5475	1.00	F	5.0E-04	4.786E-08	F	5.0E-04	4.800E-08
ok	Ce-144	7300	1.00	F	5.0E-04	4.054E-08	F	5.0E-04	4.000E-08
<<<<	Ce-144	100	1.00	M	1.0E-03	1.908E-07	M	5.0E-03	4.000E-08
ok	Ce-144	365	1.00	M	5.0E-04	1.554E-07	M	5.0E-04	1.600E-07
ok	Ce-144	1825	1.00	M	5.0E-04	8.805E-08	M	5.0E-04	8.800E-08
ok	Ce-144	3650	1.00	M	5.0E-04	5.494E-08	M	5.0E-04	5.500E-08
ok	Ce-144	5475	1.00	M	5.0E-04	4.073E-08	M	5.0E-04	4.100E-08
ok	Ce-144	7300	1.00	M	5.0E-04	3.602E-08	M	5.0E-04	3.600E-08
<<<<	Ce-144	100	1.00	S	1.0E-03	2.107E-07	S	5.0E-03	3.600E-08
ok	Ce-144	365	1.00	S	5.0E-04	1.823E-07	S	5.0E-04	1.800E-07
ok	Ce-144	1825	1.00	S	5.0E-04	1.113E-07	S	5.0E-04	1.100E-07
ok	Ce-144	3650	1.00	S	5.0E-04	7.295E-08	S	5.0E-04	7.300E-08
ok	Ce-144	5475	1.00	S	5.0E-04	5.727E-08	S	5.0E-04	5.800E-08
ok	Ce-144	7300	1.00	S	5.0E-04	5.270E-08	S	5.0E-04	5.300E-08
ok	Bi-210	100	1.00	F	1.0E-01	1.059E-08	F	1.0E-01	1.100E-08
ok	Bi-210	365	1.00	F	5.0E-02	6.877E-09	F	5.0E-02	6.900E-09
ok	Bi-210	1825	1.00	F	5.0E-02	3.234E-09	F	5.0E-02	3.200E-09
ok	Bi-210	3650	1.00	F	5.0E-02	2.071E-09	F	5.0E-02	2.100E-09
ok	Bi-210	5475	1.00	F	5.0E-02	1.283E-09	F	5.0E-02	1.300E-09
ok	Bi-210	7300	1.00	F	5.0E-02	1.066E-09	F	5.0E-02	1.100E-09
ok	Bi-210	100	1.00	M	1.0E-01	3.851E-07	M	1.0E-01	3.900E-07
ok	Bi-210	365	1.00	M	5.0E-02	2.947E-07	M	5.0E-02	3.000E-07
ok	Bi-210	1825	1.00	M	5.0E-02	1.849E-07	M	5.0E-02	1.800E-07
ok	Bi-210	3650	1.00	M	5.0E-02	1.279E-07	M	5.0E-02	1.300E-07
ok	Bi-210	5475	1.00	M	5.0E-02	1.121E-07	M	5.0E-02	1.100E-07
ok	Bi-210	7300	1.00	M	5.0E-02	9.304E-08	M	5.0E-02	9.300E-08
ok	Bi-212	100	1.00	F	1.0E-01	6.611E-08	F	1.0E-01	6.500E-08
ok	Bi-212	365	1.00	F	5.0E-02	4.588E-08	F	5.0E-02	4.500E-08
ok	Bi-212	1825	1.00	F	5.0E-02	2.140E-08	F	5.0E-02	2.100E-08
ok	Bi-212	3650	1.00	F	5.0E-02	1.498E-08	F	5.0E-02	1.500E-08
-->	Bi-212	5475	1.00	F	5.0E-02	1.054E-08	F	5.0E-02	1.000E-08
ok	Bi-212	7300	1.00	F	5.0E-02	9.164E-09	F	5.0E-02	9.100E-09
ok	Bi-212	100	1.00	M	1.0E-01	1.558E-07	M	1.0E-01	1.600E-07
ok	Bi-212	365	1.00	M	5.0E-02	1.118E-07	M	5.0E-02	1.100E-07
ok	Bi-212	1825	1.00	M	5.0E-02	6.084E-08	M	5.0E-02	6.000E-08
ok	Bi-212	3650	1.00	M	5.0E-02	4.450E-08	M	5.0E-02	4.400E-08
ok	Bi-212	5475	1.00	M	5.0E-02	3.786E-08	M	5.0E-02	3.800E-08
ok	Bi-212	7300	1.00	M	5.0E-02	3.096E-08	M	5.0E-02	3.100E-08
ok	Po-210	100	1.00	F	2.0E-01	7.364E-06	F	2.0E-01	7.400E-06
ok	Po-210	365	1.00	F	1.0E-01	4.823E-06	F	1.0E-01	4.800E-06
ok	Po-210	1825	1.00	F	1.0E-01	2.190E-06	F	1.0E-01	2.200E-06
ok	Po-210	3650	1.00	F	1.0E-01	1.293E-06	F	1.0E-01	1.300E-06
ok	Po-210	5475	1.00	F	1.0E-01	7.648E-07	F	1.0E-01	7.700E-07
ok	Po-210	7300	1.00	F	1.0E-01	6.092E-07	F	1.0E-01	6.100E-07
ok	Po-210	100	1.00	M	2.0E-01	1.499E-05	M	2.0E-01	1.500E-05
ok	Po-210	365	1.00	M	1.0E-01	1.085E-05	M	1.0E-01	1.100E-05
ok	Po-210	1825	1.00	M	1.0E-01	6.663E-06	M	1.0E-01	6.700E-06
ok	Po-210	3650	1.00	M	1.0E-01	4.567E-06	M	1.0E-01	4.600E-06
ok	Po-210	5475	1.00	M	1.0E-01	3.950E-06	M	1.0E-01	4.000E-06
ok	Po-210	7300	1.00	M	1.0E-01	3.270E-06	M	1.0E-01	3.300E-06
ok	Po-210	100	1.00	S	2.0E-02	1.782E-05	S	2.0E-02	1.800E-05
ok	Po-210	365	1.00	S	1.0E-02	1.374E-05	S	1.0E-02	1.400E-05
ok	Po-210	1825	1.00	S	1.0E-02	8.619E-06	S	1.0E-02	8.600E-06
ok	Po-210	3650	1.00	S	1.0E-02	5.902E-06	S	1.0E-02	5.900E-06
ok	Po-210	5475	1.00	S	1.0E-02	5.119E-06	S	1.0E-02	5.100E-06
ok	Po-210	7300	1.00	S	1.0E-02	4.265E-06	S	1.0E-02	4.300E-06
<<<<	Ac-228	100	1.00	F	1.0E-02	1.278E-07	F	5.0E-03	4.300E-06
<<<<	Ac-228	365	1.00	F	1.0E-03	1.080E-07	F	5.0E-04	4.300E-06
<<<<	Ac-228	1825	1.00	F	1.0E-03	5.733E-08	F	5.0E-04	4.300E-06
<<<<	Ac-228	3650	1.00	F	1.0E-03	3.476E-08	F	5.0E-04	4.300E-06
<<<<	Ac-228	5475	1.00	F	1.0E-03	2.364E-08	F	5.0E-04	4.300E-06
<<<<	Ac-228	9125	1.00	F	1.0E-03	2.203E-08	F	5.0E-04	4.300E-06
<<<<	Ac-228	100	1.00	M	1.0E-02	6.882E-08	M	5.0E-03	4.300E-06
<<<<	Ac-228	365	1.00	M	1.0E-03	5.723E-08	M	5.0E-04	4.300E-06
<<<<	Ac-228	1825	1.00	M	1.0E-03	3.443E-08	M	5.0E-04	4.300E-06
<<<<	Ac-228	3650	1.00	M	1.0E-03	2.251E-08	M	5.0E-04	4.300E-06
<<<<	Ac-228	5475	1.00	M	1.0E-03	1.850E-08	M	5.0E-04	4.300E-06
<<<<	Ac-228	9125	1.00	M	1.0E-03	1.624E-08	M	5.0E-04	4.300E-06
<<<<	Ac-228	100	1.00	S	1.0E-02	6.371E-08	S	5.0E-03	4.300E-06
<<<<	Ac-228	365	1.00	S	1.0E-03	5.209E-08	S	5.0E-04	4.300E-06
<<<<	Ac-228	1825	1.00	S	1.0E-03	3.264E-08	S	5.0E-04	4.300E-06
<<<<	Ac-228	3650	1.00	S	1.0E-03	2.188E-08	S	5.0E-04	4.300E-06
<<<<	Ac-228	5475	1.00	S	1.0E-03	1.858E-08	S	5.0E-04	4.300E-06
<<<<	Ac-228	9125	1.00	S	1.0E-03	1.571E-08	S	5.0E-04	4.300E-06
<<<<	Pa-233	100	1.00	M	1.0E-02	1.545E-08	M	5.0E-03	4.300E-06
<<<<	Pa-233	365	1.00	M	1.0E-03	1.151E-08	M	5.0E-04	4.300E-06
<<<<	Pa-233	1825	1.00	M	1.0E-03	6.764E-09	M	5.0E-04	4.300E-06
<<<<	Pa-233	3650	1.00	M	1.0E-03	4.819E-09	M	5.0E-04	4.300E-06
<<<<	Pa-233	5475	1.00	M	1.0E-03	4.216E-09	M	5.0E-04	4.300E-06
<<<<	Pa-233	9125	1.00	M	1.0E-03	3.349E-09	M	5.0E-04	4.300E-06
<<<<	Pa-233	100	1.00	S	1.0E-02	1.663E-08	S	5.0E-03	4.300E-06

<<<<	Pa-233	365	1.00	S	1.0E-03	1.255E-08	S	5.0E-04	4.300E-06
<<<<	Pa-233	1825	1.00	S	1.0E-03	7.497E-09	S	5.0E-04	4.300E-06
<<<<	Pa-233	3650	1.00	S	1.0E-03	5.439E-09	S	5.0E-04	4.300E-06
<<<<	Pa-233	5475	1.00	S	1.0E-03	4.865E-09	S	5.0E-04	4.300E-06
<<<<	Pa-233	9125	1.00	S	1.0E-03	3.863E-09	S	5.0E-04	4.300E-06
<<<<	Pa-234	100	1.00	M	1.0E-02	2.870E-09	M	5.0E-03	4.300E-06
<<<<	Pa-234	365	1.00	M	1.0E-03	2.091E-09	M	5.0E-04	4.300E-06
<<<<	Pa-234	1825	1.00	M	1.0E-03	1.059E-09	M	5.0E-04	4.300E-06
<<<<	Pa-234	3650	1.00	M	1.0E-03	6.979E-10	M	5.0E-04	4.300E-06
<<<<	Pa-234	5475	1.00	M	1.0E-03	4.837E-10	M	5.0E-04	4.300E-06
<<<<	Pa-234	9125	1.00	M	1.0E-03	3.905E-10	M	5.0E-04	4.300E-06
<<<<	Pa-234	100	1.00	S	1.0E-02	3.005E-09	S	5.0E-03	4.300E-06
<<<<	Pa-234	365	1.00	S	1.0E-03	2.187E-09	S	5.0E-04	4.300E-06
<<<<	Pa-234	1825	1.00	S	1.0E-03	1.113E-09	S	5.0E-04	4.300E-06
<<<<	Pa-234	3650	1.00	S	1.0E-03	7.361E-10	S	5.0E-04	4.300E-06
<<<<	Pa-234	5475	1.00	S	1.0E-03	5.154E-10	S	5.0E-04	4.300E-06
<<<<	Pa-234	9125	1.00	S	1.0E-03	4.157E-10	S	5.0E-04	4.300E-06
ok	Np-236L	100	1.00	F	5.0E-03	9.122E-06	F	5.0E-03	8.900E-06
ok	Np-236L	365	1.00	F	5.0E-04	9.340E-06	F	5.0E-04	9.100E-06
ok	Np-236L	1825	1.00	F	5.0E-04	7.255E-06	F	5.0E-04	7.200E-06
ok	Np-236L	3650	1.00	F	5.0E-04	7.501E-06	F	5.0E-04	7.500E-06
ok	Np-236L	5475	1.00	F	5.0E-04	7.947E-06	F	5.0E-04	7.900E-06
ok	Np-236L	9125	1.00	F	5.0E-04	7.951E-06	F	5.0E-04	8.000E-06
ok	Np-236L	100	1.00	M	5.0E-03	3.066E-06	M	5.0E-03	3.000E-06
ok	Np-236L	365	1.00	M	5.0E-04	3.190E-06	M	5.0E-04	3.100E-06
ok	Np-236L	1825	1.00	M	5.0E-04	2.691E-06	M	5.0E-04	2.700E-06
ok	Np-236L	3650	1.00	M	5.0E-04	2.698E-06	M	5.0E-04	2.700E-06
ok	Np-236L	5475	1.00	M	5.0E-04	3.108E-06	M	5.0E-04	3.100E-06
ok	Np-236L	9125	1.00	M	5.0E-04	3.169E-06	M	5.0E-04	3.200E-06
ok	Np-236L	100	1.00	S	5.0E-03	1.618E-06	S	5.0E-03	1.600E-06
ok	Np-236L	365	1.00	S	5.0E-04	1.615E-06	S	5.0E-04	1.600E-06
ok	Np-236L	1825	1.00	S	5.0E-04	1.279E-06	S	5.0E-04	1.300E-06
ok	Np-236L	3650	1.00	S	5.0E-04	1.016E-06	S	5.0E-04	1.000E-06
ok	Np-236L	5475	1.00	S	5.0E-04	1.021E-06	S	5.0E-04	1.000E-06
ok	Np-236L	9125	1.00	S	5.0E-04	1.022E-06	S	5.0E-04	1.000E-06
ok	Np-236S	100	1.00	F	5.0E-03	2.837E-08	F	5.0E-03	2.800E-08
ok	Np-236S	365	1.00	F	5.0E-04	2.571E-08	F	5.0E-04	2.600E-08
ok	Np-236S	1825	1.00	F	5.0E-04	1.525E-08	F	5.0E-04	1.500E-08
ok	Np-236S	3650	1.00	F	5.0E-04	1.069E-08	F	5.0E-04	1.100E-08
ok	Np-236S	5475	1.00	F	5.0E-04	8.975E-09	F	5.0E-04	8.900E-09
ok	Np-236S	9125	1.00	F	5.0E-04	9.018E-09	F	5.0E-04	8.800E-09
ok	Np-236S	100	1.00	M	5.0E-03	1.620E-08	M	5.0E-03	1.600E-08
ok	Np-236S	365	1.00	M	5.0E-04	1.394E-08	M	5.0E-04	1.400E-08
ok	Np-236S	1825	1.00	M	5.0E-04	8.891E-09	M	5.0E-04	8.900E-09
ok	Np-236S	3650	1.00	M	5.0E-04	6.225E-09	M	5.0E-04	6.200E-09
ok	Np-236S	5475	1.00	M	5.0E-04	5.635E-09	M	5.0E-04	5.600E-09
ok	Np-236S	9125	1.00	M	5.0E-04	5.338E-09	M	5.0E-04	5.300E-09
ok	Np-236S	100	1.00	S	5.0E-03	1.592E-08	S	5.0E-03	1.600E-08
ok	Np-236S	365	1.00	S	5.0E-04	1.329E-08	S	5.0E-04	1.300E-08
ok	Np-236S	1825	1.00	S	5.0E-04	8.452E-09	S	5.0E-04	8.500E-09
ok	Np-236S	3650	1.00	S	5.0E-04	5.652E-09	S	5.0E-04	5.700E-09
ok	Np-236S	5475	1.00	S	5.0E-04	4.820E-09	S	5.0E-04	4.800E-09
ok	Np-236S	9125	1.00	S	5.0E-04	4.242E-09	S	5.0E-04	4.200E-09
ok	Np-237	100	1.00	F	5.0E-03	9.873E-05	F	5.0E-03	9.800E-05
ok	Np-237	365	1.00	F	5.0E-04	9.419E-05	F	5.0E-04	9.300E-05
ok	Np-237	1825	1.00	F	5.0E-04	6.085E-05	F	5.0E-04	6.000E-05
ok	Np-237	3650	1.00	F	5.0E-04	5.020E-05	F	5.0E-04	5.000E-05
ok	Np-237	5475	1.00	F	5.0E-04	4.823E-05	F	5.0E-04	4.700E-05
ok	Np-237	9125	1.00	F	5.0E-04	4.971E-05	F	5.0E-04	4.800E-05
ok	Np-237	100	1.00	M	5.0E-03	4.412E-05	M	5.0E-03	4.400E-05
ok	Np-237	365	1.00	M	5.0E-04	4.058E-05	M	5.0E-04	4.000E-05
ok	Np-237	1825	1.00	M	5.0E-04	2.798E-05	M	5.0E-04	2.800E-05
ok	Np-237	3650	1.00	M	5.0E-04	2.196E-05	M	5.0E-04	2.200E-05
ok	Np-237	5475	1.00	M	5.0E-04	2.225E-05	M	5.0E-04	2.200E-05
ok	Np-237	9125	1.00	M	5.0E-04	2.270E-05	M	5.0E-04	2.200E-05
ok	Np-237	100	1.00	S	5.0E-03	3.659E-05	S	5.0E-03	3.700E-05
ok	Np-237	365	1.00	S	5.0E-04	3.192E-05	S	5.0E-04	3.200E-05
ok	Np-237	1825	1.00	S	5.0E-04	2.129E-05	S	5.0E-04	2.100E-05
ok	Np-237	3650	1.00	S	5.0E-04	1.440E-05	S	5.0E-04	1.400E-05
ok	Np-237	5475	1.00	S	5.0E-04	1.265E-05	S	5.0E-04	1.300E-05
ok	Np-237	9125	1.00	S	5.0E-04	1.189E-05	S	5.0E-04	1.200E-05
ok	Np-239	100	1.00	F	5.0E-03	2.586E-09	F	5.0E-03	2.600E-09
--->	Np-239	365	1.00	F	5.0E-04	1.767E-09	F	5.0E-04	1.400E-09
ok	Np-239	1825	1.00	F	5.0E-04	6.363E-10	F	5.0E-04	6.300E-10
ok	Np-239	3650	1.00	F	5.0E-04	3.860E-10	F	5.0E-04	3.800E-10
ok	Np-239	5475	1.00	F	5.0E-04	2.097E-10	F	5.0E-04	2.000E-10
ok	Np-239	9125	1.00	F	5.0E-04	1.736E-10	F	5.0E-04	1.700E-10
ok	Np-239	100	1.00	M	5.0E-03	5.864E-09	M	5.0E-03	5.800E-09
ok	Np-239	365	1.00	M	5.0E-04	4.179E-09	M	5.0E-04	4.200E-09
ok	Np-239	1825	1.00	M	5.0E-04	2.027E-09	M	5.0E-04	2.000E-09
ok	Np-239	3650	1.00	M	5.0E-04	1.433E-09	M	5.0E-04	1.400E-09
ok	Np-239	5475	1.00	M	5.0E-04	1.177E-09	M	5.0E-04	1.200E-09
ok	Np-239	9125	1.00	M	5.0E-04	9.333E-10	M	5.0E-04	9.300E-10
ok	Np-239	100	1.00	S	5.0E-03	5.643E-09	S	5.0E-03	5.600E-09
ok	Np-239	365	1.00	S	5.0E-04	4.009E-09	S	5.0E-04	4.000E-09
ok	Np-239	1825	1.00	S	5.0E-04	2.199E-09	S	5.0E-04	2.200E-09
ok	Np-239	3650	1.00	S	5.0E-04	1.562E-09	S	5.0E-04	1.600E-09
ok	Np-239	5475	1.00	S	5.0E-04	1.296E-09	S	5.0E-04	1.300E-09
ok	Np-239	9125	1.00	S	5.0E-04	1.026E-09	S	5.0E-04	1.000E-09
ok	Pu-236	100	1.00	F	5.0E-03	1.034E-04	F	5.0E-03	1.000E-04
ok	Pu-236	365	1.00	F	5.0E-04	9.436E-05	F	5.0E-04	9.500E-05
ok	Pu-236	1825	1.00	F	5.0E-04	6.112E-05	F	5.0E-04	6.100E-05
ok	Pu-236	3650	1.00	F	5.0E-04	4.458E-05	F	5.0E-04	4.400E-05
ok	Pu-236	5475	1.00	F	5.0E-04	3.732E-05	F	5.0E-04	3.700E-05
ok	Pu-236	9125	1.00	F	5.0E-04	3.981E-05	F	5.0E-04	3.800E-05
ok	Pu-236	100	1.00	M	5.0E-03	4.763E-05	M	5.0E-03	4.800E-05
ok	Pu-236	365	1.00	M	5.0E-04	4.253E-05	M	5.0E-04	4.300E-05
ok	Pu-236	1825	1.00	M	5.0E-04	2.913E-05	M	5.0E-04	2.900E-05
ok	Pu-236	3650	1.00	M	5.0E-04	2.092E-05	M	5.0E-04	2.100E-05
ok	Pu-236	5475	1.00	M	5.0E-04	1.917E-05	M	5.0E-04	1.900E-05
ok	Pu-236	9125	1.00	M	5.0E-04	1.955E-05	M	5.0E-04	1.900E-05
ok	Pu-236	100	1.00	S	1.0E-04	3.604E-05	S	1.0E-04	3.600E-05
ok	Pu-236	365	1.00	S	1.0E-05	3.083E-05	S	1.0E-05	3.100E-05
ok	Pu-236	1825	1.00	S	1.0E-05	2.002E-05	S	1.0E-05	2.000E-05
ok	Pu-236	3650	1.00	S	1.0E-05	1.351E-05	S	1.0E-05	1.400E-05
ok	Pu-236	5475	1.00	S	1.0E-05	1.171E-05	S	1.0E-05	1.200E-05
ok	Pu-236	9125	1.00	S	1.0E-05	1.047E-05	S	1.0E-05	1.000E-05
ok	Pu-238	100	1.00	F	5.0E-03	1.987E-04	F	5.0E-03	2.000E-04
ok	Pu-238	365	1.00	F	5.0E-04	1.910E-04	F	5.0E-04	1.900E-04
ok	Pu-238	1825	1.00	F	5.0E-04	1.384E-04	F	5.0E-04	1.400E-04

ok	Pu-238	3650	1.00	F	5.0E-04	1.117E-04	F	5.0E-04	1.100E-04
ok	Pu-238	5475	1.00	F	5.0E-04	1.005E-04	F	5.0E-04	1.000E-04
ok	Pu-238	9125	1.00	F	5.0E-04	1.081E-04	F	5.0E-04	1.100E-04
ok	Pu-238	100	1.00	M	5.0E-03	7.771E-05	M	5.0E-03	7.800E-05
ok	Pu-238	365	1.00	M	5.0E-04	7.418E-05	M	5.0E-04	7.400E-05
ok	Pu-238	1825	1.00	M	5.0E-04	5.638E-05	M	5.0E-04	5.600E-05
ok	Pu-238	3650	1.00	M	5.0E-04	4.408E-05	M	5.0E-04	4.400E-05
ok	Pu-238	5475	1.00	M	5.0E-04	4.316E-05	M	5.0E-04	4.300E-05
ok	Pu-238	9125	1.00	M	5.0E-04	4.619E-05	M	5.0E-04	4.400E-05
ok	Pu-238	100	1.00	S	1.0E-04	4.456E-05	S	1.0E-04	4.500E-05
ok	Pu-238	365	1.00	S	1.0E-05	3.994E-05	S	1.0E-05	4.000E-05
ok	Pu-238	1825	1.00	S	1.0E-05	2.718E-05	S	1.0E-05	2.700E-05
ok	Pu-238	3650	1.00	S	1.0E-05	1.885E-05	S	1.0E-05	1.900E-05
ok	Pu-238	5475	1.00	S	1.0E-05	1.694E-05	S	1.0E-05	1.700E-05
ok	Pu-238	9125	1.00	S	1.0E-05	1.607E-05	S	1.0E-05	1.600E-05
ok	Pu-239	100	1.00	F	5.0E-03	2.097E-04	F	5.0E-03	2.100E-04
ok	Pu-239	365	1.00	F	5.0E-04	2.035E-04	F	5.0E-04	2.000E-04
ok	Pu-239	1825	1.00	F	5.0E-04	1.516E-04	F	5.0E-04	1.500E-04
ok	Pu-239	3650	1.00	F	5.0E-04	1.247E-04	F	5.0E-04	1.200E-04
ok	Pu-239	5475	1.00	F	5.0E-04	1.123E-04	F	5.0E-04	1.100E-04
ok	Pu-239	9125	1.00	F	5.0E-04	1.192E-04	F	5.0E-04	1.200E-04
ok	Pu-239	100	1.00	M	5.0E-03	8.002E-05	M	5.0E-03	8.000E-05
ok	Pu-239	365	1.00	M	5.0E-04	7.731E-05	M	5.0E-04	7.700E-05
ok	Pu-239	1825	1.00	M	5.0E-04	6.042E-05	M	5.0E-04	6.000E-05
ok	Pu-239	3650	1.00	M	5.0E-04	4.808E-05	M	5.0E-04	4.800E-05
ok	Pu-239	5475	1.00	M	5.0E-04	4.720E-05	M	5.0E-04	4.700E-05
ok	Pu-239	9125	1.00	M	5.0E-04	5.014E-05	M	5.0E-04	5.000E-05
ok	Pu-239	100	1.00	S	1.0E-04	4.270E-05	S	1.0E-04	4.300E-05
ok	Pu-239	365	1.00	S	1.0E-05	3.854E-05	S	1.0E-05	3.900E-05
ok	Pu-239	1825	1.00	S	1.0E-05	2.660E-05	S	1.0E-05	2.700E-05
ok	Pu-239	3650	1.00	S	1.0E-05	1.859E-05	S	1.0E-05	1.900E-05
ok	Pu-239	5475	1.00	S	1.0E-05	1.678E-05	S	1.0E-05	1.700E-05
ok	Pu-239	9125	1.00	S	1.0E-05	1.603E-05	S	1.0E-05	1.600E-05
ok	Pu-240	100	1.00	F	5.0E-03	2.098E-04	F	5.0E-03	2.100E-04
ok	Pu-240	365	1.00	F	5.0E-04	2.035E-04	F	5.0E-04	2.000E-04
ok	Pu-240	1825	1.00	F	5.0E-04	1.516E-04	F	5.0E-04	1.500E-04
ok	Pu-240	3650	1.00	F	5.0E-04	1.246E-04	F	5.0E-04	1.200E-04
ok	Pu-240	5475	1.00	F	5.0E-04	1.123E-04	F	5.0E-04	1.100E-04
ok	Pu-240	9125	1.00	F	5.0E-04	1.192E-04	F	5.0E-04	1.200E-04
ok	Pu-240	100	1.00	M	5.0E-03	8.008E-05	M	5.0E-03	8.000E-05
ok	Pu-240	365	1.00	M	5.0E-04	7.736E-05	M	5.0E-04	7.700E-05
ok	Pu-240	1825	1.00	M	5.0E-04	6.044E-05	M	5.0E-04	6.000E-05
ok	Pu-240	3650	1.00	M	5.0E-04	4.809E-05	M	5.0E-04	4.800E-05
ok	Pu-240	5475	1.00	M	5.0E-04	4.721E-05	M	5.0E-04	4.700E-05
ok	Pu-240	9125	1.00	M	5.0E-04	5.015E-05	M	5.0E-04	5.000E-05
ok	Pu-240	100	1.00	S	1.0E-04	4.277E-05	S	1.0E-04	4.300E-05
ok	Pu-240	365	1.00	S	1.0E-05	3.859E-05	S	1.0E-05	3.900E-05
ok	Pu-240	1825	1.00	S	1.0E-05	2.664E-05	S	1.0E-05	2.700E-05
ok	Pu-240	3650	1.00	S	1.0E-05	1.862E-05	S	1.0E-05	1.900E-05
ok	Pu-240	5475	1.00	S	1.0E-05	1.680E-05	S	1.0E-05	1.700E-05
ok	Pu-240	9125	1.00	S	1.0E-05	1.605E-05	S	1.0E-05	1.600E-05
ok	Pu-241	100	1.00	F	5.0E-03	2.839E-06	F	5.0E-03	2.800E-06
ok	Pu-241	365	1.00	F	5.0E-04	2.938E-06	F	5.0E-04	2.900E-06
ok	Pu-241	1825	1.00	F	5.0E-04	2.586E-06	F	5.0E-04	2.600E-06
ok	Pu-241	3650	1.00	F	5.0E-04	2.383E-06	F	5.0E-04	2.400E-06
ok	Pu-241	5475	1.00	F	5.0E-04	2.229E-06	F	5.0E-04	2.200E-06
ok	Pu-241	9125	1.00	F	5.0E-04	2.288E-06	F	5.0E-04	2.300E-06
ok	Pu-241	100	1.00	M	5.0E-03	9.196E-07	M	5.0E-03	9.100E-07
ok	Pu-241	365	1.00	M	5.0E-04	9.827E-07	M	5.0E-04	9.700E-07
ok	Pu-241	1825	1.00	M	5.0E-04	9.256E-07	M	5.0E-04	9.200E-07
ok	Pu-241	3650	1.00	M	5.0E-04	8.339E-07	M	5.0E-04	8.300E-07
ok	Pu-241	5475	1.00	M	5.0E-04	8.592E-07	M	5.0E-04	8.600E-07
ok	Pu-241	9125	1.00	M	5.0E-04	9.008E-07	M	5.0E-04	9.000E-07
ok	Pu-241	100	1.00	S	1.0E-04	2.220E-07	S	1.0E-04	2.200E-07
ok	Pu-241	365	1.00	S	1.0E-05	2.365E-07	S	1.0E-05	2.400E-07
ok	Pu-241	1825	1.00	S	1.0E-05	2.034E-07	S	1.0E-05	2.000E-07
ok	Pu-241	3650	1.00	S	1.0E-05	1.691E-07	S	1.0E-05	1.700E-07
ok	Pu-241	5475	1.00	S	1.0E-05	1.726E-07	S	1.0E-05	1.700E-07
ok	Pu-241	9125	1.00	S	1.0E-05	1.747E-07	S	1.0E-05	1.700E-07
ok	Pu-242	100	1.00	F	5.0E-03	1.993E-04	F	5.0E-03	2.000E-04
ok	Pu-242	365	1.00	F	5.0E-04	1.934E-04	F	5.0E-04	1.900E-04
ok	Pu-242	1825	1.00	F	5.0E-04	1.441E-04	F	5.0E-04	1.400E-04
ok	Pu-242	3650	1.00	F	5.0E-04	1.185E-04	F	5.0E-04	1.200E-04
ok	Pu-242	5475	1.00	F	5.0E-04	1.068E-04	F	5.0E-04	1.100E-04
ok	Pu-242	9125	1.00	F	5.0E-04	1.133E-04	F	5.0E-04	1.100E-04
ok	Pu-242	100	1.00	M	5.0E-03	7.581E-05	M	5.0E-03	7.600E-05
ok	Pu-242	365	1.00	M	5.0E-04	7.326E-05	M	5.0E-04	7.300E-05
ok	Pu-242	1825	1.00	M	5.0E-04	5.729E-05	M	5.0E-04	5.700E-05
ok	Pu-242	3650	1.00	M	5.0E-04	4.557E-05	M	5.0E-04	4.500E-05
ok	Pu-242	5475	1.00	M	5.0E-04	4.472E-05	M	5.0E-04	4.500E-05
ok	Pu-242	9125	1.00	M	5.0E-04	4.756E-05	M	5.0E-04	4.800E-05
ok	Pu-242	100	1.00	S	1.0E-04	4.016E-05	S	1.0E-04	4.000E-05
ok	Pu-242	365	1.00	S	1.0E-05	3.622E-05	S	1.0E-05	3.600E-05
ok	Pu-242	1825	1.00	S	1.0E-05	2.501E-05	S	1.0E-05	2.500E-05
ok	Pu-242	3650	1.00	S	1.0E-05	1.743E-05	S	1.0E-05	1.700E-05
ok	Pu-242	5475	1.00	S	1.0E-05	1.570E-05	S	1.0E-05	1.600E-05
ok	Pu-242	9125	1.00	S	1.0E-05	1.503E-05	S	1.0E-05	1.500E-05
ok	Am-241	100	1.00	F	5.0E-03	1.860E-04	F	5.0E-03	1.800E-04
ok	Am-241	365	1.00	F	5.0E-04	1.775E-04	F	5.0E-04	1.800E-04
ok	Am-241	1825	1.00	F	5.0E-04	1.228E-04	F	5.0E-04	1.200E-04
ok	Am-241	3650	1.00	F	5.0E-04	1.010E-04	F	5.0E-04	1.000E-04
ok	Am-241	5475	1.00	F	5.0E-04	9.278E-05	F	5.0E-04	9.200E-05
ok	Am-241	9125	1.00	F	5.0E-04	9.640E-05	F	5.0E-04	9.600E-05
ok	Am-241	100	1.00	M	5.0E-03	7.373E-05	M	5.0E-03	7.300E-05
ok	Am-241	365	1.00	M	5.0E-04	6.967E-05	M	5.0E-04	6.900E-05
ok	Am-241	1825	1.00	M	5.0E-04	5.106E-05	M	5.0E-04	5.100E-05
ok	Am-241	3650	1.00	M	5.0E-04	4.055E-05	M	5.0E-04	4.000E-05
ok	Am-241	5475	1.00	M	5.0E-04	4.027E-05	M	5.0E-04	4.000E-05
ok	Am-241	9125	1.00	M	5.0E-04	4.171E-05	M	5.0E-04	4.000E-05
ok	Am-241	100	1.00	S	5.0E-03	4.585E-05	S	5.0E-03	4.600E-05
ok	Am-241	365	1.00	S	5.0E-04	4.013E-05	S	5.0E-04	4.000E-05
ok	Am-241	1825	1.00	S	5.0E-04	2.725E-05	S	5.0E-04	2.700E-05
ok	Am-241	3650	1.00	S	5.0E-04	1.894E-05	S	5.0E-04	1.900E-05
ok	Am-241	5475	1.00	S	5.0E-04	1.702E-05	S	5.0E-04	1.700E-05
ok	Am-241	9125	1.00	S	5.0E-04	1.604E-05	S	5.0E-04	1.600E-05
ok	Am-243	100	1.00	F	5.0E-03	1.825E-04	F	5.0E-03	1.800E-04
ok	Am-243	365	1.00	F	5.0E-04	1.745E-04	F	5.0E-04	1.700E-04
ok	Am-243	1825	1.00	F	5.0E-04	1.214E-04	F	5.0E-04	1.200E-04
ok	Am-243	3650	1.00	F	5.0E-04	1.003E-04	F	5.0E-04	1.000E-04
ok	Am-243	5475	1.00	F	5.0E-04	9.230E-05	F	5.0E-04	9.100E-05

ok	Am-243	9125	1.00	F	5.0E-04	9.569E-05	F	5.0E-04	9.600E-05
ok	Am-243	100	1.00	M	5.0E-03	7.185E-05	M	5.0E-03	7.200E-05
ok	Am-243	365	1.00	M	5.0E-04	6.805E-05	M	5.0E-04	6.800E-05
ok	Am-243	1825	1.00	M	5.0E-04	5.016E-05	M	5.0E-04	5.000E-05
ok	Am-243	3650	1.00	M	5.0E-04	3.999E-05	M	5.0E-04	4.000E-05
ok	Am-243	5475	1.00	M	5.0E-04	3.976E-05	M	5.0E-04	3.900E-05
ok	Am-243	9125	1.00	M	5.0E-04	4.118E-05	M	5.0E-04	4.100E-05
ok	Am-243	100	1.00	S	5.0E-03	4.403E-05	S	5.0E-03	4.400E-05
ok	Am-243	365	1.00	S	5.0E-04	3.856E-05	S	5.0E-04	3.900E-05
ok	Am-243	1825	1.00	S	5.0E-04	2.625E-05	S	5.0E-04	2.600E-05
ok	Am-243	3650	1.00	S	5.0E-04	1.824E-05	S	5.0E-04	1.800E-05
ok	Am-243	5475	1.00	S	5.0E-04	1.637E-05	S	5.0E-04	1.600E-05
ok	Am-243	9125	1.00	S	5.0E-04	1.548E-05	S	5.0E-04	1.500E-05
ok	Cm-242	100	1.00	F	5.0E-03	2.680E-05	F	5.0E-03	2.700E-05
ok	Cm-242	365	1.00	F	5.0E-04	2.070E-05	F	5.0E-04	2.100E-05
ok	Cm-242	1825	1.00	F	5.0E-04	1.016E-05	F	5.0E-04	1.000E-05
ok	Cm-242	3650	1.00	F	5.0E-04	6.137E-06	F	5.0E-04	6.100E-06
ok	Cm-242	5475	1.00	F	5.0E-04	3.995E-06	F	5.0E-04	4.000E-06
ok	Cm-242	9125	1.00	F	5.0E-04	3.308E-06	F	5.0E-04	3.300E-06
ok	Cm-242	100	1.00	M	5.0E-03	2.232E-05	M	5.0E-03	2.200E-05
ok	Cm-242	365	1.00	M	5.0E-04	1.749E-05	M	5.0E-04	1.800E-05
ok	Cm-242	1825	1.00	M	5.0E-04	1.061E-05	M	5.0E-04	1.100E-05
ok	Cm-242	3650	1.00	M	5.0E-04	7.302E-06	M	5.0E-04	7.300E-06
ok	Cm-242	5475	1.00	M	5.0E-04	6.341E-06	M	5.0E-04	6.400E-06
ok	Cm-242	9125	1.00	M	5.0E-04	5.200E-06	M	5.0E-04	5.200E-06
ok	Cm-242	100	1.00	S	5.0E-03	2.352E-05	S	5.0E-03	2.400E-05
ok	Cm-242	365	1.00	S	5.0E-04	1.843E-05	S	5.0E-04	1.900E-05
ok	Cm-242	1825	1.00	S	5.0E-04	1.158E-05	S	5.0E-04	1.200E-05
ok	Cm-242	3650	1.00	S	5.0E-04	8.125E-06	S	5.0E-04	8.100E-06
ok	Cm-242	5475	1.00	S	5.0E-04	7.233E-06	S	5.0E-04	7.300E-06
ok	Cm-242	9125	1.00	S	5.0E-04	5.922E-06	S	5.0E-04	5.900E-06
ok	Cm-243	100	1.00	F	5.0E-03	1.599E-04	F	5.0E-03	1.600E-04
ok	Cm-243	365	1.00	F	5.0E-04	1.493E-04	F	5.0E-04	1.500E-04
ok	Cm-243	1825	1.00	F	5.0E-04	9.599E-05	F	5.0E-04	9.500E-05
ok	Cm-243	3650	1.00	F	5.0E-04	7.340E-05	F	5.0E-04	7.300E-05
ok	Cm-243	5475	1.00	F	5.0E-04	6.548E-05	F	5.0E-04	6.500E-05
ok	Cm-243	9125	1.00	F	5.0E-04	6.938E-05	F	5.0E-04	6.700E-05
ok	Cm-243	100	1.00	M	5.0E-03	6.659E-05	M	5.0E-03	6.700E-05
ok	Cm-243	365	1.00	M	5.0E-04	6.135E-05	M	5.0E-04	6.100E-05
ok	Cm-243	1825	1.00	M	5.0E-04	4.214E-05	M	5.0E-04	4.200E-05
ok	Cm-243	3650	1.00	M	5.0E-04	3.145E-05	M	5.0E-04	3.100E-05
ok	Cm-243	5475	1.00	M	5.0E-04	3.033E-05	M	5.0E-04	3.000E-05
ok	Cm-243	9125	1.00	M	5.0E-04	3.150E-05	M	5.0E-04	3.100E-05
ok	Cm-243	100	1.00	S	5.0E-03	4.585E-05	S	5.0E-03	4.600E-05
ok	Cm-243	365	1.00	S	5.0E-04	3.970E-05	S	5.0E-04	4.000E-05
ok	Cm-243	1825	1.00	S	5.0E-04	2.626E-05	S	5.0E-04	2.600E-05
ok	Cm-243	3650	1.00	S	5.0E-04	1.785E-05	S	5.0E-04	1.800E-05
ok	Cm-243	5475	1.00	S	5.0E-04	1.578E-05	S	5.0E-04	1.600E-05
ok	Cm-243	9125	1.00	S	5.0E-04	1.462E-05	S	5.0E-04	1.400E-05
ok	Cm-244	100	1.00	F	5.0E-03	1.456E-04	F	5.0E-03	1.500E-04
ok	Cm-244	365	1.00	F	5.0E-04	1.346E-04	F	5.0E-04	1.300E-04
ok	Cm-244	1825	1.00	F	5.0E-04	8.371E-05	F	5.0E-04	8.300E-05
ok	Cm-244	3650	1.00	F	5.0E-04	6.154E-05	F	5.0E-04	6.100E-05
ok	Cm-244	5475	1.00	F	5.0E-04	5.364E-05	F	5.0E-04	5.300E-05
ok	Cm-244	9125	1.00	F	5.0E-04	5.702E-05	F	5.0E-04	5.600E-05
ok	Cm-244	100	1.00	M	5.0E-03	6.186E-05	M	5.0E-03	6.200E-05
ok	Cm-244	365	1.00	M	5.0E-04	5.636E-05	M	5.0E-04	5.600E-05
ok	Cm-244	1825	1.00	M	5.0E-04	3.767E-05	M	5.0E-04	3.700E-05
ok	Cm-244	3650	1.00	M	5.0E-04	2.724E-05	M	5.0E-04	2.700E-05
ok	Cm-244	5475	1.00	M	5.0E-04	2.572E-05	M	5.0E-04	2.600E-05
ok	Cm-244	9125	1.00	M	5.0E-04	2.659E-05	M	5.0E-04	2.600E-05
ok	Cm-244	100	1.00	S	5.0E-03	4.418E-05	S	5.0E-03	4.400E-05
ok	Cm-244	365	1.00	S	5.0E-04	3.805E-05	S	5.0E-04	3.800E-05
ok	Cm-244	1825	1.00	S	5.0E-04	2.491E-05	S	5.0E-04	2.500E-05
ok	Cm-244	3650	1.00	S	5.0E-04	1.674E-05	S	5.0E-04	1.700E-05
ok	Cm-244	5475	1.00	S	5.0E-04	1.464E-05	S	5.0E-04	1.500E-05
ok	Cm-244	9125	1.00	S	5.0E-04	1.345E-05	S	5.0E-04	1.300E-05

Appendix B

Checks on external risk coefficients

Checks on external risk coefficients

Results of the comparison are summarized in the following table in the form of ratios A : B , where A is the risk coefficient for a given radionuclide and external exposure scenario as given in the Federal Guidance 13 draft document, and B is the corresponding risk coefficient generated from Table 6.2. Zero entries for a given radionuclide indicate that the external dose rate from that radionuclide is assumed to be zero.

Radionuclide	Submersion	Ground plane	Soil
H-3	.000	.000	.000
C-14	1.009	.998	1.000
S-35	1.008	.998	1.002
Ar-37	.000	.000	.000
Ar-39	1.007	1.008	1.003
Ar-41	1.006	1.005	1.003
Ca-45	1.011	1.000	1.000
Ca-47	1.004	1.006	1.003
Sc-47	1.004	1.004	1.000
Fe-55	.000	.000	.000
Fe-59	1.003	1.003	1.003
Co-57	1.004	1.003	1.000
Co-58	1.004	1.004	1.004
Co-60	1.003	1.000	1.004
Ni-59	.000	.000	.000
Ni-63	.000	.000	.000
Zn-65	1.007	1.003	1.000
Se-75	1.002	1.005	1.004
Se-79	1.008	.999	1.002
Kr-74	1.004	1.003	1.003
Kr-76	1.000	1.005	1.010
Kr-77	1.004	1.004	1.004
Kr-79	1.003	1.000	1.003
Kr-81m	1.003	1.003	1.004
Kr-81	1.000	1.003	1.008
Kr-83m	.985	.991	.989
Kr-85m	1.003	1.004	1.003
Kr-85	1.004	1.005	1.003
Kr-87	1.005	1.005	1.004
Kr-88	1.004	1.003	1.003
Br-74	1.000	1.000	1.000
Br-76	1.004	1.000	1.004
Br-77	1.003	1.000	1.003
Rb-87	1.008	1.000	1.002
Rb-88	1.006	1.003	1.000
Sr-89	1.007	1.009	1.005
Sr-90	1.008	1.008	1.004

Y-90	1.006	1.008	1.009
Zr-95	1.000	1.003	1.000
Nb-94	1.005	1.004	1.002
Nb-95m	1.000	1.003	1.007
Nb-95	1.000	1.005	1.005
Mo-99	1.003	1.004	1.003
Tc-95m	1.006	1.006	1.006
Tc-95	1.005	1.005	1.000
Tc-99m	1.004	1.003	1.004
Tc-99	1.009	1.000	1.002
Ru-103	1.000	1.004	1.000
Ru-106	.000	.000	.000
Rh-103m	.986	.990	.990
Rh-106	1.004	1.008	1.004
Ag-108m	1.003	1.004	1.002
Ag-108	1.004	1.006	1.004
Ag-110m	1.003	1.007	1.003
Ag-110	1.004	1.006	1.000
Sb-124	1.004	1.004	1.004
Sb-125	1.010	1.004	1.000
Sb-126	1.004	1.007	1.004
Sb-127	1.000	1.003	1.000
Te-121	1.000	1.003	1.000
Te-123m	1.000	1.003	1.000
Te-123	.993	.994	.993
Te-125m	.993	.991	.995
Te-127m	.996	.997	.993
Te-127	1.000	1.003	1.008
Te-129m	1.003	1.000	1.004
Te-129	1.007	1.003	1.007
Te-131m	1.003	1.004	1.003
Te-131	1.010	1.004	1.000
Te-132	1.002	1.009	1.002
I-120	1.004	1.007	1.004
I-121	1.003	1.005	1.004
I-122	1.004	1.004	1.004
I-123	1.003	1.002	1.003
I-125	.993	1.000	.995
I-129	1.000	.999	.997
I-131	1.003	1.000	1.003
I-132	1.003	1.000	1.003
I-133	1.000	1.006	1.000
I-134	1.003	1.000	1.004
I-135	1.005	1.004	1.002
Xe-120	1.003	1.005	1.001
Xe-121	1.002	1.004	1.004
Xe-122	1.000	1.000	1.000
Xe-123	1.000	1.003	1.006
Xe-125	1.002	1.000	1.004

Xe-127	1.002	1.000	1.004
Xe-129m	1.000	1.000	1.000
Xe-131m	1.000	1.000	1.001
Xe-133m	1.002	1.006	1.004
Xe-133	1.002	1.000	1.003
Xe-135m	1.010	1.004	1.009
Xe-135	1.003	1.000	1.002
Xe-138	1.003	1.004	1.003
Cs-134	1.003	1.004	1.002
Cs-135	1.009	1.000	1.000
Cs-136	1.004	1.009	1.003
Cs-137	1.008	1.008	1.003
Cs-138	1.003	1.008	1.003
Ce-141	1.000	1.003	1.000
Ce-144	1.000	1.003	1.000
Pr-144m	1.000	1.000	1.000
Pr-144	1.000	1.006	1.000
Ba-133	1.003	1.005	1.004
Ba-137m	1.007	1.003	1.006
Ba-140	1.002	1.003	1.002
La-140	1.003	1.009	1.004
Tl-207	1.000	1.008	1.003
Tl-208	1.003	1.006	1.000
Tl-209	1.004	1.010	1.003
Pb-210	1.000	1.000	1.000
Pb-211	1.008	1.003	1.000
Pb-212	1.003	1.004	1.003
Pb-214	1.003	1.008	1.003
Bi-210	1.008	1.010	1.000
Bi-211	1.009	1.000	1.009
Bi-212	1.004	1.010	1.004
Bi-214	1.005	1.004	1.002
Po-210	1.000	1.004	1.004
Po-211	1.005	1.005	1.005
Po-212	.000	.000	.000
Po-214	1.005	1.002	1.004
Po-215	1.002	1.003	1.002
Po-216	1.002	1.003	1.002
Po-218	1.000	1.004	1.004
Rn-218	1.005	1.005	1.005
Rn-219	1.000	1.003	1.008
Rn-220	1.003	1.000	1.001
Rn-222	1.003	1.000	1.000
Ra-224	1.004	1.004	1.005
Ra-226	1.007	1.003	1.007
Ra-228	.000	.000	.000
Ac-228	1.004	1.004	1.004
Pa-233	1.002	1.000	1.005
Pa-234m	1.005	1.006	1.002

Pa-234	1.002	1.004	1.004
Th-228	1.002	1.000	1.003
Th-230	1.001	1.000	1.002
Th-231	1.000	1.000	1.007
Th-232	.997	.994	1.000
Th-234	1.007	1.003	1.002
U-232	1.000	.993	1.003
U-233	1.001	.996	1.003
U-234	1.000	.995	1.000
U-235	1.003	1.004	1.003
U-236	.994	.988	.999
U-238	.990	.993	.996
Np-236a	1.004	1.002	1.000
Np-236b	1.000	1.004	1.003
Np-237	1.002	1.008	1.003
Np-239	1.003	1.004	1.003
Pu-236	.990	.987	.997
Pu-238	.985	.990	.995
Pu-239	1.000	.990	1.000
Pu-240	.993	.990	.995
Pu-241	1.003	1.001	1.004
Pu-242	.991	.988	.994
Am-241	1.000	1.000	1.000
Am-243	1.002	1.004	1.004
Cm-242	.993	.987	.993
Cm-243	1.004	1.003	1.004
Cm-244	.984	.990	.988