

From: SMTP%"HOOGENBOOM@IRI.TUDELFT.NL" 25-NOV-1993 17:24:17.22
 To: SARTORI
 CC:
 Subj: JEF2.2 yield and decay data

Date: Thu, 25 Nov 1993 17:23:14 +0100 (MET)
 From: HOOGENBOOM@IRI.TUDELFT.NL
 Subject: JEF2.2 yield and decay data
 To: SARTORI@NEA.FR
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Dear Enrico,

You may know that I am working on an update of the ORIGEN-S libraries for fission product yields and decay data using JEF2.2. This led me to some inconsistencies in the JEF2.2 data. In view of the JEF evaluation meetings I list them below and hope you will bring them to the attention of the appropriate evaluators.

There are a number of fission product nuclides for which a yield is given for one or more of the fissionable nuclides in special purpose file 24, but that are not present in the special purpose file for radioactive decay data (22). This should imply that they are stable, which can be the case for a number of very light nuclides which emerge from ternary fission. However, certainly the isomeric states should have decay data. These are

33-As-78m
 34-Se-85m
 35-Br-86m
 45-Rh-109m
 64-Gd-157m
 65-Tb-162m
 65-Tb-163m
 66-Dy-167m

However, there are many more ground state nuclides with a non-zero yield which are unstable according to the present ORIGEN-S library or which are not at the present ORIGEN-S library but are at the beginning of a decay chain and very probably are unstable, presumably with rather short half live (this may also be a reason for not being on the JEF decay data file, but this is very confusing with the possibility of stable nuclides). I could prepare a complete list, if necessary.

Another point is that a number of fission product nuclides on the JEF2.2 decay data file have zero decay energy. Their number is less than on JEF1.1, but I think the lacking data should be supplied. This concerns

29-Cu-78	MAT-2970
30-Zn-73m	MAT-3059
35-Br-93	MAT-3576
35-Br-94	MAT-3579
37-Rb-101	MAT-3788
37-Rb-102	MAT-3791
43-Tc-111	MAT-4373
48-Cd-130	MAT-4893
49-In-133	MAT-4997
54-Xe-147	MAT-5498
56-Ba-149	MAT-5691
65-Tb-156m	MAT-6547

Finally there are fission products which have a certain non-zero yield on the ORIGEN-S library but no yield (for any fissionable nuclide) in the JEF2.2 library, e.g. 49-In-113m.