

27 January 1988

To: Distribution

From:  
M. Lammer and O. Schwerer

Subject: Comments on TRANS 2118, 2119

Please find enclosed our comments on TRANS 2118 and 2119. The entries containing fission yield data were checked in particular detail in view of their importance to the IAEA coordinated research programme on fission yield evaluation. In a number of cases we request retransmission.

For the special case of entry 22050 see the Appendix to this memo (with copy to Dr. J. Blachot, Grenoble).


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General comments on TRANS 2118 and 2119

- For fission yield measurements in thermal reactors, REACTION SF8 (modifier) should be MXW rather than SPA. This applies to entries 22047 (TRANS 2118) and to 22054-22056, 22058-22060, 22063, 22064, 22067, 22069, 22070, 22073 (TRANS 2119) as well as to the MONITORS given therein. (This is not repeated in the detailed error list).
- If several lab codes are given under INSTITUTE or if the lab of the facility is different from the one given under INSTITUTE, the relevant lab code should be given under FACILITY. This applies to entries 22054, 22056, 22057, 22059, 22060, 22061, 22063, 22070, 22071, 22072, 22074 (TRANS 2119) and to entry 22038 (TRANS 2118). (This is not repeated in the detailed error list).
- DEPENDENT data should be identified under STATUS.
- Do not use code (ACTIV) for activity measurements of fission products. Activity measurement is not the same as activation method.
- Headings given in BIB section under ERR-ANALYS should be consistent with those in the DATA section.
- REACTION SF4 must be coded for (N,EL), (N,THS), (N,G). For scattering quantities even if A=0 (natural target).

Comments on TRANS 2118

Entry	Subent	Line(s)	Comment
22038*)	1	21	(G) should be (DG) SAMPLE details should be moved to subentries ANALYSIS: ISIS-2 fitting what? (photopeaks or Gaussian charge distr.?)
		5-7	1) Gaussian width parameters must be given, otherwise ZP is meaningless (see EXFOR on Fission Yields, page 3, 'Note') 2) dependent on subentries 2-4
22040*)	1	4,20 12 14 20 23	Vol. no. not enclosed in parentheses units should be NEUTRONS/CM2/SEC delete (ACTIV) ref-type should be S CORRECTION: list the "smaller corrections" in detail

*) Retransmission requested

TRANS 2118 (continued)

Entry	Subent	Line(s)	Comment
22040*)	2		Important missing information: 1) DECAY-DATA (51-SB-131,23.MIN,B-, ,0.068) BRANCHING to TE-131-M (52-TE-131-M,30.HR,DG, ,0.22) BRANCHING TO TE-131-G (52-TE-131-G,25.MIN)
			2) ASSUMED (92-U-235(N,F)51-SB-131,CUM,FY, ,MKW) = 0.0248 PC/FIS (may be given in data table)
			3) It would be useful for evaluators to give also cooling time and duration of measurement.
		3	Important missing information: as in subentry 2, with A=133 and respective num.values
22041	2-13		ERR-ANALYS: delete DATA-ERR2, DATA-ERR1 (which are never used), or replace by DATA-ERR.
22042	1	20	SF4 missing
		38	N1 missing (3)
	2	3	SF4 missing
22045	2-6 13-16	3	SF4 missing
22046*)	2-7	3	SF4 missing
	8-11	4	SF4 missing Illegal use of multiple reaction formalism. (N,TOT) and (N,G) must be compiled in separate subentries.
	12-22	3	SF4 missing
22047	2		COMMENT: this should be given under ASSUMED
	3,4		dependent on subentry 2
	4		assumed value for Gaussian width parameter should be given
22048	1	45	SF4 missing
	2-27	3	SF4 missing
	23	16	col.74 should be '3'

*) Retransmission requested

TRANS 2118 (continued)

Entry	Subent	Line(s)	Comment
22049	2,5-10		MONIT-REF should be coded (....,B,PH-DAT,13,1,81). Note: For the 'Physics Data' Series the <u>book</u> code PH-DAT was introduced several years ago because for reports no expansion is possible. (The report code FIZ-KA- does not show up on 'Physics Data' copies, therefore it would be difficult to identify for the user.)
22050	1	3	Vol. no. not enclosed in parentheses see <u>Appendix</u> to this memo
22052	1		REFERENCE: Shouldn't JP/C,35 be the first (=main) reference? (In most of our indexing and retrieval programs only the first reference is retrieved on; it determines also the "year" the data are labelled with. Here the private communication dates from 1987, but the data will be labelled with 1984 because this is the year of the first reference.)
	4	4/5, 6/7	extra pair of parentheses missing
		19	delete heading 'FLAG' (neither given in BIB section nor any values given)

Comments on TRANS 2119

Entry	Subent	Line(s)	Comment
22054	1	3 13	issue no. not enclosed in parentheses ACTIV does not apply here
22056*)	1 2,4		METHOD: move free text to appropriate subentry Incident neutron energy: Our check-program considers the heading EN-MEAN together with EN-MIN and EN-MAX as duplicated energy entry. The Manual does not give clear instructions for this case. We would prefer giving either EN-MEAN only, or EN-MIN with EN-MAX. EN-MIN should probably rather give the actual low limit of the spectrum and <u>not</u> the threshold energy of the measured reaction.
	4,5		1) These data are <u>dependent</u> on subentry 2/3 which must be given under STATUS. 2) Most of the BIB section (being identical to subentry 2) can then be deleted. 3) Replace keyword COMMENT by ASSUMED.
22057*)	2		The explanation under FLAG 1.,2.,3. cannot be correct. The exact explanation as given in the paper should be reproduced (probably, the daughter products were measured via γ -spectrometry; then the yield is that of the respective parent, which should be given in the data table).
22058*)	1	20	PART-DET: either delete this line (not necessary) or use correct code DG (decay γ s)
		3	add STATUS (DEP,22058002)
22059	1	14	ACTIV does not apply here
		13-19	METHOD should include "fission counting"; DETECTOR should include "no information on fission counter" ERR-ANALYS: give more details, or refer to paper
	2,3	5	repetition of nuclide not necessary
22060*)	1	11 13	add flux units "N/CM2/SEC". delete (ACTIV) MONITOR only relevant for subentry 2, should be moved there
	2	24	identical to line 23 except flag. Why is it repeated? Tb-160 does not have an isomer!

*) Retransmission requested

TRANS 2119 (continued)

Entry	Subent	Line(s)	Comment
22060*)	3		Data probably derived from subentry 2. This and the source of chain yields should be stated.
	4		Dependent on subentry 3. COMMENT should be ASSUMED.
22062*)	2,3	4	Chain yield is in contradiction to coding 42-MO-99 in SF4. Either change to CUM or code as chain yield for MASS=99 with explanation under CORRECTION how chain yield was obtained from measuring MO-99.
		4	dependent on subentry 2 (times monitor)
		5	" " " 3 "
22064*)	1		SAMPLE applies only to subentry 2 (MONITOR)
	2		FLAG(1.) explanation incorrect ("sum of the two nuclides"): - for A=99: both the Mo and Tc measurements actually result in yield values for Mo-99, therefore the value is rather an "averaged" value for Mo. - for A=117 it is the sum of the yields for 2 isomers.
	2,3		METHOD: delete (ACTIV)
	3		Pointers should not be used for the 2 monitors because only 1 DATA column given (not DATA 1, DATA 2). Delete pointers and use headings MONIT1, MONIT1-ERR, MONIT2, MONIT2-ERR. Headings MONIT1, MONIT2 may be given in BIB section (see Manual 8.MONITOR). FLAG: see subentry 2
22066*)	1		add BOWLES and WILLIS to AUTHOR since their results are given in DATA section
22067*)	4,5		dependent on subentries 2,3 Gaussian width parameters of mass distribution should be given in free text under ASSUMED or in table under MISC.
22069	1	14	delete (ACTIV)
	3	3	isomer extension -M/M+G should be -M/T

*) Retransmission requested

TRANS 2119 (continued)

Entry	Subent	Line(s)	Comment
22071	4	9	probably wrong HISTORY date
22072*)	1	50	'main' misspelled
	8		EN missing (must be given whenever a projectile is given in SF2, e.g. as EN-MIN and EN-MAX)
22073*)	1	13	delete (ACTIV)
	2		MONIT2: Specification of <u>mass</u> for normalization is missing (probably A=140 if comparing with data-table). (MONIT2 could be moved to this line of data table.) Also MONIT-REF should be given and values for MONIT1. If normalization is arbitrary, REL should be added to SF8 and units should be ARB-UNITS.
		5,7	delete pointers (mixture of pointer-formalism and MONIT1-, MONIT2-formalism).
	3		COMMENT should rather be MONITOR (or perhaps ANALYSIS).
22074	4	3	delete M+G (= total cross section, which must be coded without isomer extension)

*) Retransmission requested

Comments on EXFOR 22050

The main reference of this EXFOR entry (IAEA-169, page 59) is a review article on burnup determination and gives only a summary of the fission yield measurements. This has 2 consequences, which make this reference unsuitable as main reference of the entry, namely:

- 1) Essentially no experimental details are given (as reflected in the BIB-section)
- 2) The results are combined from 3 different experiments from at least 2 different facilities (RAPSODIE, OSIRIS, possibly also ISIS).

Since this paper has been written, several meetings on fission yields recommended the measurement and evaluation of fast fission yields as a function of neutron energy (mean energy or some sort of spectral index for fast reactor spectra), as opposed to the practice of averaging all "fast fission yields".

Fast reactor spectra certainly differ in different facilities, or even in different irradiation positions of the same facility. Therefore it would be important to compile the results of the different experiments separately. One of the experiments is described in the second reference (71CANT, page 19), other experimental details can be found in reference [3] and [5] cited in the main reference, and more information should be sought from the authors.

Since the experiments have been performed a long time ago, and the authors are likely to have changed their fields of activities, I recommend to contact Dr. J. Blachot from CEN Grenoble, who is still actively involved in the measurement and evaluation of fission yields.