

WPEC Sub-group 25: Validation of Fission Product Decay Data for Decay Heat Calculations

Report to WPEC, May 2006

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1. Kick-off Meeting at Vienna

An IAEA Consultants' Meeting on "Beta-decay and decay heat" was held at IAEA Headquarters on 12-14 December 2005, as a kick-off meeting for the joint effort of the decay-heat specialists and the TAGS measurement group. All the second-day participants among those listed in the Appendix agreed to join WPEC Subgroup 25, followed by a further participation of three Japanese scientists. The summary report of this meeting was prepared by A.L. Nichols as INDC(NDS)-0483.

2. Recommendations and Actions from the Vienna Meeting

- (1) Discrepancies between existing 21st century libraries. Assessment is required to understand precisely the nature of individual differences between JENDL-FPDD-2000 and JEFF-3.1.
- (2) Provisional list of nuclides to be studied using TAGS

It is required to identify the nuclides worthy of new TAGS measurements, in part through the action (1).

- (3) Experimental studies

Participants believe that accurate measurements of the average beta- and gamma-energies can be made by means of the TAGS technique. Measurements of ground state transitions are also essential. Though existing experimental facilities should be used for some particular cases, a dedicated facility should be setup at a particular accelerator where sufficient beam time can be devoted to these measurements in a systematic way.

- (4) Library of TAGS data

Data derived from TAGS should be collected and recorded as that proper use can be made of the TAGS results. The contents of this new database should be made widely available, and should not be restricted to decay heat applications.

3. Second Meeting

A second SG25/Consultants' Meeting on "Beta-decay and decay heat" was held on 3 May 2006 at the NEA Headquarters, Issy-les-Moulineaux, France, in advance of the annual WPEC meeting. All relevant decay databases and decay heat analyses were re-assessed, and actions were agreed to complete this particular aspect of the work in preparation for a definitive list of fission-product radionuclides for TAGS

measurements. The provisional list of TAGS radionuclides has increased further to approaching 25-30 (from the original (and now consolidated) list of 15 radionuclides).

Proposed measurement facilities were described, including plans for TAGS studies at Orsay. Further discussions are required to solicit full support and agreement by Orsay personal (ALTO).

No further SG meetings are envisaged at this time – a final table of recommended radionuclides for TAGS will be agreed on the basis of the two meetings, and a SG report will be produced before the end of 2006.

APPENDIX

LISTS OF PARTICIPANTS

IAEA Consultants' Meeting *Beta-decay and decay heat* at Vienna, 12-14 December 2005

ALGORA, Alejandro	Institute de Fisica Corpuscular, Valencia
BERSILLON, Olivier	CEA/DAM, Bruyères-le-Châtel
GELLETTY, William	University of Surrey, Guilford, Surrey
HENRIKSSON, Hans	NEA Data Bank, Issy-les-Moulineaux
JACQMIN, Robert*	CEA/DER, SPRC, Cadarache
KELLETT, Mark A,	IAEA Nuclear Data Section, Vienna
MENGONI, Alberto*	IAEA Nuclear Data Section, Vienna
NICHOLS, Alan L.	IAEA Nuclear Data Section, Vienna
RUBIO, Berta	Institute de Fisica Corpuscular, Valencia
SONZOGNI, Alejandro	NNDC, Brookhaven National Laboratory, Upton
TAIN, Jose Luis	Institute de Fisica Corpuscular, Valencia
YOSHIDA, Tadashi	Musashi Institute of Technology, Tokyo

* Attended only on the first day as advisers/observers

SG25/CM *Beta-decay and decay heat* at NEA Data Bank, 3 May 2006, additional:

GAULD, Ian	ORNL (represented by DUNN, M)
KATAKURA, Jun-ichi	Nuclear Data Center, JAEA, Tokai
MILLS, Robert	Nexia Solutions, Sellafield
DEAN, Christopher	Serco Assurance, Winfrith

Other SG25 participants:

OYAMATSU, Kazuhiro	Aichi Shukutoku University, Nagoya
TACHIBANA, Takahiro	Waseda University, Tokyo