

July 31, 2017

Patricia Schroeder
Standards Manager
American Nuclear Society
555 N. Kensington Avenue
La Grange Park, IL 60526

Dear Ms. Schroeder:

Thank you for your quick response to our letter requesting permission to extract portions of tables from American National Standards Institute (ANSI)/American Nuclear Society (ANS)-5.1-2014 for use in a revision to Regulatory Guide (RG) 3.54. We understand your concern with our request as expressed in your April 28, 2017, e-mail to me in which you requested more information related to the request. Based upon your concern, the U.S. Nuclear Regulatory Commission (NRC) staff has reduced the applicability and amount of information requested to be extracted from the ANSI/ANS-5.1-2014 tables. The NRC staff also discussed the content of your response in regard to our intentions for revising the RG, and are responding to provide answers to the questions you raised.

Regarding your question "Will the revision of RG 3.54 endorse any portion of ANSI/ANS-5.1-2014?". The revision to RG 3.54 will not formally endorse ANSI/ANS-5.1-2014. The applicability of the extracted information would be for spent fuel storage for time periods of greater than 1 year and adopt the fission product decay heat data directly. This applicability limits to using only a portion of the coefficients in the table of fission products.

Additionally, you asked "If ANSI/ANS-5.1-2014 is not to be endorsed, will there be any mention on the use of ANSI/ANS-5.1-2014, its scope, or anything else in the text of RG 3.54 (other than the required statement provided in the permission letter)?". The background section of the RG discusses the consensus standards used for calculating decay heat, and includes the ANSI/ANS-5.1 standard. The standard is also included in the list of references.

Table 1 of RG 3.54 (provided below) will contain the extracted information for only part of the fission products for spent fuel storage applications with times greater than 1 year. As shown below, a footnote to the table indicates the source of the coefficient data is ANSI/ANS-5.1-2014 standard.

Term index <i>j</i>	U-235 (thermal)		Pu-239 (thermal)		U-238 (fast)		Pu-241 (thermal)	
	α_{1j}	λ_{1j}	α_{2j}	λ_{2j}	α_{3j}	λ_{3j}	α_{4j}	λ_{4j}
1	1.8523E-07	6.6332E-07	1.6736E-07	6.4594E-07	1.6020E-07	6.3343E-07	2.3018E-08	1.1312E-06
2	2.6592E-08	1.2281E-07	2.1160E-08	1.2822E-07	2.3089E-08	1.2879E-07	1.5817E-07	6.2987E-07
3	2.2356E-09	2.7163E-08	2.9388E-09	2.5166E-08	2.5481E-09	2.5604E-08	1.8074E-08	1.3149E-07
4	8.9582E-12	3.2955E-09	1.3659E-10	1.3176E-08	3.5071E-11	9.1544E-09	3.6922E-09	2.4237E-08
5	8.5968E-11	7.4225E-10	5.7450E-11	7.3568E-10	6.3399E-11	7.3940E-10	5.3843E-11	9.6433E-09
6	2.1072E-14	2.4681E-10	3.8422E-14	2.4663E-10	4.1599E-14	2.4731E-10	5.3003E-11	7.3467E-10
7	7.1219E-16	1.5596E-13	1.8030E-16	3.3490E-13	5.3295E-16	1.9594E-13	4.8358E-14	2.4827E-10
8	8.1126E-17	2.2573E-14	1.8342E-15	1.8761E-13	1.6695E-18	6.4303E-14	9.8516E-16	1.6873E-13
9	9.4678E-17	2.0503E-14	1.9884E-16	3.1544E-14	4.1058E-16	6.4229E-14	1.3076E-16	8.3639E-15

Note: The data in the table are from ANSI/ANS-5.1-2014

Finally, you stated in your email “Contrary to our Standards Board Chair and Vice Chair, ANS-5.1 Working Group Chair Ian Gauld feels that including portions of the tables from ANSI/ANS-5.1-2014 in RG 3.54 would lead users of RG 3.54 to ANSI/ANS-5.1-2014. Might you be able to provide at least one instance why a user of RG 3.54 would need a copy of ANSI/ANS-5.1-2014 if the table, as you propose with data from ANSI/ANS-5.1-2014, is provided in RG 3.54?” Using information from the ANSI/ANS 5.1 standard in RG 3.54 is an effort by the NRC staff to adopt modern industry standard data in regulatory applications and, therefore, is a benefit to RG 3.54 users to possess references used to support licensing documentation.

I trust that this information addresses your expressed concerns adequately. If you need additional information or have more questions, I suggest a conference call be arranged. If such a need arises, please contact Alexis Sotomayor-Rivera at 301-415-7265 to arrange a conference call.

Sincerely,

/RA/

Travis Tate, Chief
Criticality, Shielding, and Risk Assessment Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

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