

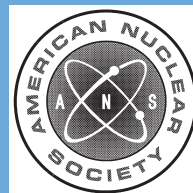
American Nuclear Society

WITHDRAWN

**neutron and gamma-ray
flux-to-dose-rate factors**

an American National Standard

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**American National Standard
Neutron and Gamma-Ray
Flux-to-Dose-Rate Factors**

**Secretariat
American Nuclear Society**

**Prepared by the
American Nuclear Society
Standards Committee
Working Group ANS-6.1.1**

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Foreword

(This Foreword is not a part of American National Standard Neutron and Gamma-Ray Flux-to-Dose-Rate Factors, ANSI/ANS-6.1.1-1977)

The project scope of ANS-6.1, one of eight working groups which make up Subcommittee ANS-6 of the American Nuclear Society Standards Committee, is to provide or select reference cross sections and related nuclear data for use in radiation analysis and shielding computations. In April 1973, ANS-6.1 was assigned the task of writing a draft standard containing recommended data for converting neutron and gamma-ray fluxes to biological dose rates. Responsibility for writing the standard was assumed by the ANS-6.1.1 chairman. Initial drafts were submitted for comments to the ANS-6 chairman, the members of ANS-6.1.1, and researchers in this field outside the subcommittee. The membership of Working Group ANS-6.1.1 is as follows:

M. E. Battat, Chairman, <i>Los Alamos Scientific Laboratory</i>	J. H. Hubbell, <i>National Bureau of Standards</i>
D. E. Bartine, <i>Oak Ridge National Laboratory</i>	R. W. Roussin, <i>Oak Ridge National Laboratory</i>
D. R. Harris, <i>Los Alamos Scientific Laboratory</i>	

Following approval by ANS-6.1.1, the first draft of N666 was submitted for balloting to the ANS-6 subcommittee chairman and working group chairmen. Final resolution of comments received and the one negative ballot cast was achieved in May 1975 and the document was prepared for transmittal to American National Standards Committee N17.

Because of the increasing concern for the effects of nuclear radiation exposure, it has become important to specify standard methods and data used to estimate the magnitude of radiation fields in nuclear facilities. The usual analytic procedure in estimating the radiation attenuation of shields or other geometric configurations is to compute the scalar flux density as a function of energy at selected locations and to integrate this spectrum, multiplied by flux-to-dose-rate conversion functions, over energy. Since several conversion functions have been in common use, the working group has chosen specific functions for neutrons and gamma rays to serve as a standard.

The chosen neutron response functions are those most recently recommended by the National Council on Radiation Protection and Measurement (NCRP). The gamma-ray functions are taken from similar work. The assumption is made that the important parameter is the maximum dose rate in tissue irradiated by a beam having normal incidence. This assumption gives results which are conservative for assumed whole-body exposures, since other angular distributions result in lower maximum values.

The membership of Subcommittee ANS-6, Radiation Protection and Shielding, at the time the draft standard was approved for submission to N17 was:

D. K. Trubey, Chairman, <i>Oak Ridge National Laboratory</i>	H. E. Hungerford, <i>Purdue University</i>
M. E. Battat, <i>Los Alamos Scientific Laboratory</i>	P. J. Persiani, <i>Argonne National Laboratory</i>
G. G. Biro, <i>Gibbs and Hill, Inc.</i>	G. L. Simmons, <i>Science Applications, Inc.</i>
B. A. Engholm, <i>General Atomic Company</i>	E. A. Warman, <i>Stone and Webster Engineering Corporation</i>

The American National Standards Committee N17, Research Reactors, Reactor Physics, and Radiation Shielding, had the following membership at the time it reviewed and approved this Standard:

W. L. Whittemore, Chairman
 R. S. Carter, Secretary

<i>Organization Represented</i>	<i>Name of Representative</i>
American College of Radiology.....	Michel M. TerPogossian
American Institute of Chemical Engineers.....	Richard Duffy
American Nuclear Society	W. L. Whittemore
American Physical Society	W. W. Havens, Jr. Herbert Goldstein (Alt)
American Public Health Association.....	Charles G. Amato William A. Holt (Alt)
American Society of Mechanical Engineers.....	Roy A. Axford
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Health Physics Society	Charles A. Willis
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National Council on Radiation Protection & Measurement	Arthur B. Chilton
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