American Nuclear Society

calculation and measurement of direct and scattered gamma radiation from LWR nuclear power plants

WITHDRAWN

an American National Standard

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CORRIGENDA

American National Standard Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants, ANSI/ANS-6.6.1-1979.

Contents:

Figure 6.4, for Reference Problem No. I.2 — should read: for Reference Problem No. I.1
Figure 6.8, for Reference Problem No. II.1 — should read: for Reference Problem No. II.2

Page 1, Section 1, Scope, first paragraph, third line:

liquid water reactor — should read: light water reactor

Page 4, subsection 6.2.1., Sources Inside Shielded Buildings:

< 4 ft. (1.22 m) — should read: > 4 ft. (1.22 m)

Page 7, subsection 6.5, Site Topography, fourth line from bottom:

if the evaluation — should read: if the elevation

Figures 6.3, 6.4, 6.5, 6.6, 6.7, and 6.8 (on pages 12-17, respectively):

A negative symbol (–) should be included in the exponents for each of the numbers in the ordinates of the above figures, — e.g., 10^{13} should read: 10^{-13}

Page 13, Figure 6.4:

In the title of 6.4, ...for Reference Problem No. I.2 — should read:
...for Reference Problem No. I.1

Page 17, Figure 6.8:

In the title of 6.8, ...for Reference Problem No. II.1 — should read:
...for Reference Problem No. II.2

April 1982

American National Standard for Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants

Secretariat
American Nuclear Society

Prepared by the
American Nuclear Society
Standards Committee
Working Group ANS-6.6.1

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American National Standard

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Foreword

(This Foreword is not a part of American National Standard for Calculation and Measurement of Direct and Scattered Gamma-Radiation From LWR Nuclear Power Plants, ANSI/ANS-6.6.1-1979.)

In mid 1973, a need for a standard on this subject was identified by D.K. Trubey, Chairman of ANS-6. The proposed standard had been listed among those having a high priority by the Atomic Energy Commission Directorate of Regulatory Standards. The project was assigned by the NTAB Executive Committee in September 1973. Working Group 6.6 was formed and E.A. Warman was appointed Chairman in September 1973. The first meeting of the working group was held in November, 1973. Twelve subsequent meetings were held from February 1974, through June 1978.

The first working draft was completed in June, 1975. A revised working draft was distributed for initial review by ANS-6 chairmen in June, 1976. The completed Draft 1 was submitted to ANS-6 for ballot in September, 1977. This draft was unanimously approved in subsequent balloting by ANS-6 subcommittee chairmen, with the sole negative ballot being changed to affirmative after resolution of comments.

In preparing this standard, the working group decided to provide a series of reference calculations with which a radiation analyst should compare results obtained by the method he elected to use in a given application. Comparison with the results of these reference calculations is intended to provide some assurance that the methods being considered by the user of this standard produce results which are in reasonable agreement with those of other methods. These reference calculations are intentionally simplistic to make this comparison effort easier to accomplish.

This standard addresses contained sources of direct and scattered radiation and specifically excludes effluent releases and accident sources. Measurements at some operating plants, which have no local shielding to reduce reactor cavity/nozzle inspection port streaming, have indicated that localized streaming can be measurable outside the containment. Such localized streaming effects are not addressed in this standard.

Particular emphasis is placed on the direct and scattered radiation from ^{16}N sources in Boiling Water Reactors (BWRs). This emphasis reflects the fact that analysis and measurement of radiation associated with ^{16}N sources at BWRs was identified as a major area of interest in establishing priority for development of this standard. The three appendices to the standard are included as examples of the type of measurements and analyses which have been performed in connection with the ^{16}N sources at BWRs. In Appendices 1 and 2, the assumption is made that the observed dose rates are entirely due to ^{16}N activity. The net effect of this assumption is to increase the amount of conservatism in the quantification of the source terms, in that other radiations are included in the measurements from which the ^{16}N source terms are developed.

Working Group 6.6 of the Standards Committee of the American Nuclear Society had the following membership:

E. A. Warman, Chairman, *Stone & Webster Engineering Corporation*
J. V. Pace III, *Union Carbide Nuclear Division*
J. Celnik, *Burns and Roe, Inc.*
J. M. Graf, *Los Alamos Scientific Laboratory*
L. M. Hairr, *Equitable Environmental Health, Inc.*
W. E. Kreger, *U.S. Nuclear Regulatory Commission*
W. M. Lowder, *U.S. Department of Energy*
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F. J. Rahn, *Electric Power Research Institute*
D. R. Rogers, *General Electric Company*
M. B. Wells, *Radiation Research Associates*
N. B. Willoughby, *Bechtel Power Corporation*

The membership of Subcommittee ANS-6, Radiation Protection and Shielding, at the time of its approval of this standard was:

D. K. Trubey, Chairman, *Oak Ridge National Laboratory*
M. E. Battat, *Los Alamos Scientific Laboratory*
G. G. Biro, *Gibbs and Hill, Inc.*
J. Celnik, *Burns and Roe, Inc.*
H. E. Hungerford, *Purdue University*
M. J. Kolar, *Commonwealth Associates, Inc.*
P. J. Persiani, *Argonne National Laboratory*
D. J. Schuh III, *Nuclear Measurements Corporation*
E. A. Warman, *Stone & Webster Engineering Corporation*

The American National Standards Committee N17, Research Reactors, Reactor Physics and Radiation Shielding, which reviewed and approved this standard had the following membership:

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

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American Institute of Chemical Engineers	R. Duffy
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Contents

Tables