American Nuclear Society

estimating tornado, hurricane, and extreme straight line wind characteristics at nuclear facility sites

an American National Standard

REAFFIRMED

July 19, 2021

ANSI/ANS-2.3-2011 (R2021)

ANSI/ANS-2.3-2011 (R2016)

This standard has been reviewed and reaffirmed with the recognition that it may reference other standards and documents that may have been superseded or withdrawn. The requirements of this document will be met by using the version of the standards and documents referenced herein. It is the responsibility of the user to review each of the references and to determine whether the use of the original references or more recent versions is appropriate for the facility. Variations from the standards and documents referenced in this standard should be evaluated and documented.
This standard does not necessarily reflect recent industry initiatives for risk informed decision-making or a graded approach to quality assurance. Users should consider the use of these industry initiatives in the application of this standard.

published by the
American Nuclear Society
555 North Kensington Avenue
La Grange Park, Illinois 60526 USA

ANSI/ANS-2.3-2011

ANSI/ANS-2.3-2011

American National Standard
Estimating Tornado, Hurricane, and Extreme Straight Line Wind Characteristics at Nuclear Facility Sites

Secretariat
American Nuclear Society

Prepared by the
American Nuclear Society
Standards Committee
Working Group ANS-2.3

Published by the
American Nuclear Society
555 North Kensington Avenue
La Grange Park, Illinois 60526 USA

Approved April 22, 2011
by the
American National Standards Institute, Inc.

American National Standard

Designation of this document as an American National Standard attests that the principles of openness and due process have been followed in the approval procedure and that a consensus of those directly and materially affected by the standard has been achieved.

This standard was developed under procedures of the Standards Committee of the American Nuclear Society; these procedures are accredited by the American National Standards Institute, Inc., as meeting the criteria for American National Standards. The consensus committee that approved the standard was balanced to ensure that competent, concerned, and varied interests have had an opportunity to participate.

An American National Standard is intended to aid industry, consumers, governmental agencies, and general interest groups. Its use is entirely voluntary. The existence of an American National Standard, in and of itself, does not preclude anyone from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard.

By publication of this standard, the American Nuclear Society does not insure anyone utilizing the standard against liability allegedly arising from or after its use. The content of this standard reflects acceptable practice at the time of its approval and publication. Changes, if any, occurring through developments in the state of the art, may be considered at the time that the standard is subjected to periodic review. It may be reaffirmed, revised, or withdrawn at any time in accordance with established procedures. Users of this standard are cautioned to determine the validity of copies in their possession and to establish that they are of the latest issue.

The American Nuclear Society accepts no responsibility for interpretations of this standard made by any individual or by any ad hoc group of individuals. Requests for interpretation should be sent to the Standards Department at Society Headquarters. Action will be taken to provide appropriate response in accordance with established procedures that ensure consensus on the interpretation.

Comments on this standard are encouraged and should be sent to Society Headquarters.

Published by

American Nuclear Society
555 North Kensington Avenue
La Grange Park, Illinois 60526 USA

Printed in the United States of America

Foreword

(This Foreword is not a part of American National Standard "Estimating Tornado, Hurricane, and Extreme Straight Line Wind Characteristics at Nuclear Facility Sites," ANSI/ANS-2.3-2011.)

This standard is a revision to ANSI/ANS 2.3-1983, "Standard for Estimating Tornado and Extreme Wind Characteristics at Nuclear Power Sites." The revision of the 1983 standard began in May of 2005. In this revision, the scope of the standard was expanded to include hurricane wind characteristics. A change to the Fujita damage scale as a function of wind velocities, adopted in 2007 by the National Weather Service, resulted in the wind speeds associated with the Fujita damage scale being replaced by the Enhanced Fujita Scale as shown in Table 1. Also included in the scope expansion is the applicability of this standard to all nuclear facility sites, not just nuclear power plant sites.

This standard might reference documents and other standards that have been superseded or withdrawn at the time the standard is applied. A statement has been included in the reference section that provides guidance on the use of references.

This standard does not incorporate the concepts of generating risk-informed insights, performance-based requirements, or a graded approach to quality assurance. The user is advised that one or more of these techniques could enhance the application of this standard.

This standard was prepared by Working Group ANS-2.3 of the Standards Committee of the American Nuclear Society, whose membership at the time of the standard's approval was as follows:

J. D. Stevenson (Chair), *Individual*

M. Amin, *Sargent & Lundy Engineers*
A. Buslick, *U.S. Nuclear Regulatory Commission*
A. Godoy, *International Atomic Energy Agency*
B. Harvey, *U.S. Nuclear Regulatory Commission*
Q. A. Hossein, *Lawrence Livermore National Laboratory*
J. Kimball, *Defense Nuclear Facilities Safety Board*
C. A. Mazzola, *Shaw Environmental & Infrastructure, Inc.*
J. R. McDonald, *Individual*
S. K. Samaddar, *U.S. Nuclear Regulatory Commission*
E. Simiu, *National Institute of Standards and Technology*

Subcommittee ANS-25, Site Characteristics, had the following membership at the time it approved the standard:

K. R. Bryson (Chair), *Shaw Environmental, Inc.*
C. A. Mazzola (Vice Chair), *Shaw Environmental & Infrastructure, Inc.*

J. Beavers, *Individual*
J. Bollinger, *Savannah River National Laboratory*
C. Costantino, *Individual*
W. Dornsife, *Waste Control Specialists*
A. Findikakis, *Bechtel Corporation*
C. Glantz, *Pacific Northwest National Laboratory*
C. Guggino, *Bechtel Corporation*
K. Hanson, *AMEC-Geomatrix Consultants*
F. Ostadan, *Bechtel Corporation*
T. Rasmussen, *University* of Georgia
J. D. Stevenson, *Individual*
L. Vail, *Pacific Northwest National Laboratory*
S. Vigeant, *Shaw Environmental & Infrastructure, Inc.*
I. Wong, *URS Corporation*

The Nuclear Facility Standards Committee (NFSC) had the following membership at the time of its approval of this standard:

C. A. Mazzola (Chair), *Shaw Environmental & Infrastructure, Inc.*
R. M. Ruby (Vice Chair), *Constellation Energy Company*

J. A. August, *CORE, Inc.*
W. H. Bell, *South Carolina Electric & Gas Company*
J. R. Brault, *Shaw MOX Project*
C. K. Brown, *Southern Nuclear Operating Company*
K. R. Bryson, *Shaw Environmental, Inc.*
C. E. Carpenter, *U.S. Nuclear Regulatory Commission*
D. R. Eggett, *Automated Engineering Services Corporation*
R. W. Englehart, *Individual*
P. K. Guha, *U.S. Department of Energy*
P. S. Hastings, *Duke Energy Company (NuStart Liaison)*
R. A. Hill, *ERIN Engineering and Research, Inc.*
N. P. Kadambi, *Individual*
E. M. Lloyd, *Exitech Corporation*
S. A. Lott, *Los Alamos National Laboratory*
R. H. McFetridge, *Westinghouse Electric Company, LLC*
T. K. Meneely, *Westinghouse Electric Company, LLC*
C. H. Moseley, *ASME NQA Liaison*
D. G. Newton, *AREVA NP*
W. B. Reuland, *Individual*
J. C. Saldarini, *Bechtel Power Corporation*
D. J. Spellman, *Oak Ridge National Laboratory (NFSC Liaison to IEEE Nuclear Power Engineering Committee)*
S. L. Stamm, *Shaw Nuclear Services*
J. D. Stevenson, *Individual*
J. A. Werenberg, *Southern Company Services*
M. J. Wright, *Entergy Operations, Inc.*
L. Zull, *Defense Nuclear Facilities Safety Board*

NFSC Liaison:

G. Hutcherson, *Institute of Nuclear Power Operations*
J. Riley, *Nuclear Energy Institute*

Contents