

An American Standard

IEEE Standard Requirements for Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations

Sponsor
**Nuclear Power Engineering Committee
of the
IEEE Power Engineering Society**

Approved June 3, 1976
Reaffirmed March 13, 1986

IEEE Standards Board

Approved November 28, 1977
Reaffirmed August 29, 1986

American National Standards Institute

© Copyright 1976 by

The Institute of Electrical and Electronics Engineers, Inc.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Foreword

(This foreword is not a part of IEEE Std 577-1976, Requirements Reliability Analysis in the Design and Operation of Safety Systems for Nuclear Power Generating Stations).

This standard has been prepared to standardize the application of reliability techniques in the design and operation of nuclear-power generating stations. It is directed towards those systems in the nuclear station which perform protective functions and fall within the scope of IEEE Std 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations," and IEEE Std 308-1974, "Criteria for Class IE Power Systems for Nuclear Power Generating Stations." However, the requirements of this standard may be applied to other systems within a nuclear-power generating station if appropriate. This standard may also be used as a guide to establish periodic testing programs.

IEEE Std 352-1975, "Guide for General Principles of Reliability Analysis of Nuclear Power Generating Station Protection Systems," supplements this standard by providing guidance in the application of reliability techniques.

IEEE Std 338-1975, "IEEE Criteria for the Periodic Testing of Nuclear Power Generating Station Class IE Power and Protection Systems," requires that programs be established for periodic testing which are based, in part, upon the minimum acceptable analyses described in this standard.

Reliability analysis is a method which can be used to demonstrate compliance with reliability requirements stated in regulations and other standards. The subcommittee feels that when reliability analysis is used for this purpose, this standard describes an acceptable response to the requirements. The requirement that a reliability analysis be performed does not originate with this standard.

It is recognized that this standard leads current practice in the nuclear-power industry and is somewhat innovative in an attempt to fill a gap in nuclear standards. Because of this aspect, this standard should not be imposed as a requirement without consideration of the time necessary for organizations to gain experience with the analyses required in this standard.

This standard was prepared by the Reliability Subcommittee (SC-5) of the Nuclear Power Engineering Committee of the IEEE Power Engineering Society.

At the time it approved the document, Subcommittee SC-5 had the following membership:

I. M. Jacobs, *Chair*

A. W. Barchas
L. E. Booth
M. F. Chamow
D. E. Cole
M. L. Faught
W. Gangloff
B. Logan

A. J. McElroy
R. Miles
G. Stiehl
R. L. Olson
E. S. Patterson
J. R. Penland
H. Rizenstein

F. Rosa
G. Schoenbaum
W. L. Strong
B. D. Sullivan
B. M. Tashjian
R. A. Waller
J. J. Wroblewski

The membership of the working group was as follows:

J. J. Wroblewski, *Chair*

M. F. Chamow
W. C. Gangloff

R. Miles
J. R. Penland
W. L. Strong

B. D. Sullivan
B. M. Tashjian

The Liaison Representative for Probability Methods Subcommittee of the IEEE Power System Engineering Committee, at the time this document was approved by SC-5 was:

P. A. Albrecht

**Approved June 3, 1976
IEEE Standards Board**

William R. Kruesi, *Chair*
Irvin N Howell, Jr., *Vice Chair*
Ivan G. Easton, *Secretary*

William E. Andrus
Jean Jacques Archambault
Dale R. Cochran
Warren H. Cook
Louis Costrell
Jay Forster
Joseph L. Koepfinger

Irving Kolodny
Benjamin J. Leon
Anthony C. Lordi
John P. Markey
Thomas J. Martin
Donald T. Michael
Voss A. Moore
William S. Morgan

William J. Neiswender
Gustave Shapiro
Ralph M. Shower
Robert A. Soderman
Leonard W. Thomas, Sr.
Charles L. Wagner
William T. Wintringham