

American Nuclear Society

REAFFIRMED

February 12, 2015

ANSI/ANS-58.9-2002; R2015

REAFFIRMED

September 11, 1987

ANSI/ANS-58.9-1981 (R1987)

single failure criteria for light water reactor safety-related fluid systems

an American National Standard

ANSI/ANS-58.9-1981; R1987 and ANSI/ANS-58.9-2002 are one in the same. Because paperwork for the 2002 reaffirmation was not filed with ANSI in time, the standard had to be reapproved as a new standard and therefore was given a new designation. The standard was not reprinted with the new designation. Should you have any questions, contact the ANS Standards Department at standards@ans.org.

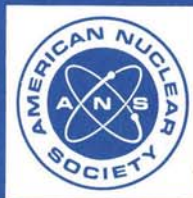
REAFFIRMED

February 24, 2009

ANSI/ANS-58.9-1981 (R2009)

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reviewed and reaffirmed with the recognition that it may reference other standards and documents that may have been superseded or withdrawn.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



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Addendum to Foreword

ANSI/ANS-58.9-2002 Single Failure Criteria for LWR Safety-Related Fluid Systems

This standard has been reapproved by the ANS Nuclear Facilities Standards Committee (NFSC) with the recognition that it may reference other standards and documents that may have been superseded or withdrawn. The requirements of this document are 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 cited 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.

**American National Standard
Single Failure Criteria for Light Water
Reactor Safety-Related Fluid Systems**

**Secretariat
American Nuclear Society**

**Prepared by the
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Standards Committee
Working Group ANS-58.9**

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Foreword

(This Foreword is not a part of American National Standard Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems, ANSI/ANS-58.9-1981, (Revision of N658-1976/ANS-51.7).)

The General Design Criteria for Nuclear Power Plants, published by the U.S. Atomic Energy Commission¹ in Title 10, Code of Federal Regulations, Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," effective May 21, 1971, requires that certain fluid systems important to safety be designed as follows:

Suitable redundancy in components and features....shall be provided to assure that....the system safety function can be accomplished, assuming a single failure.

It was pointed out in the preface to the General Design Criteria that:

The conditions under which a single failure of a passive component in a fluid system shall be considered in designing the system against a single failure are under development.

This standard was initially approved and issued by the American National Standards Institute (ANSI) in June 1976, as American National Standard Single Failure Criteria for Pressurized Water Reactor (PWR) Fluid Systems, N658-1976 (ANS-51.7).

In January 1978, a joint working group consisting of ANS-51.7 and ANS-52.4, was established to convert N658 (ANS-51.7) into a Light Water Reactor (LWR) Standard. The membership consisted of:

B. G. Schultz, Chairman, *Stone & Webster Engineering Corporation*
G. Fidler, *Westinghouse Electric Corporation*
G. Martine, *Bechtel Power Corporation*
J. Norberg, *Nuclear Regulatory Commission*

P. B. Stephens/A. N. Tschaeche, *General Electric Company*
R. Weir, *Tennessee Valley Authority*
G. Wrobel, *Rochester Gas and Electric Corporation*

In revising the standard to an LWR version, the working group reflected current industry practice, provided the practice was consistent with American National Standards Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants, N18.2-1973 (ANS-51.1), and Nuclear Safety Criteria for the Design of Stationary Boiling Water Reactor Plants, ANSI/ANS-52.1-1978.

There was discussion by the working group concerning the need for guidance on post-LOCA maintenance. The group concluded that such guidance was needed. The rationale is that for potential incidents that would require long recovery periods, such as a loss-of-coolant accident, the safety systems provided to mitigate their consequences must have long-term reliability. Therefore, additional requirements beyond single-failure criteria are prudent for those safety systems. To provide this added insurance of long-term performance capability, those systems shall be designed for inservice maintenance and repair. Although this requirement is not a single-failure criterion, the requirement is included in this standard to be certain it is appropriately treated in the design of the affected safety systems.

Draft 3, dated October 1978, resulted from a consensus approval ballot by working groups ANS-51 and ANS-52. This draft was forwarded for ballot to the American Nuclear Society's Nuclear Power Plant Standards Committee (NUPPSCO).

¹Superseded by the U.S. Nuclear Regulatory Commission (NRC) - January 1975.