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American Nuclear Society

WITHDRAWN

July 28, 2000

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containment isolation provisions for fluid systems after a LOCA

REAFFIRMED

April 26, 1989

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an American National Standard

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ERRATA

American National Standard Containment Isolation Provisions for Fluid Systems After a LOCA, ANSI/ANS-56.2-1984

Page 8, Subsection 3.4, Valve Design Criteria, second sentence:

The word "inside" should replace the word "outside" in the second sentence of subsection 3.4; it should read:

> A containment isolation valve can be an automatic isolation valve, a sealed closed valve (see sealed closed isolation valve, Section 2, Definitions), a simple check valve inside containment, or a remote manual valve.

Page 8, Subsection 3.5, Criteria for Closed Systems Inside Containment, item (3):

The words "or 3" should be inserted in (3), as follows:

> A closed system inside containment shall: . . .
>
> (3) Meet Safety Class 2 or 3 design requirements,

November 1988

American National Standard Containment Isolation Provisions for Fluid Systems After a LOCA

Secretariat
American Nuclear Society

Prepared by the
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Standards Committee
Working Group ANS-56.2

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Foreword

(This Foreword is not a part of American National Standard Containment Isolation Provisions for Fluid Systems After a LOCA, ANSI/ANS-56.2-1984.)

This revision to N271-1976 has been prepared by Working Group ANS-56.2 of the American Nuclear Society. The working group was asked by the Nuclear Power Plant Standards Committee (NUPPSCO) of the American Nuclear Society to reconvene for the purpose of reviewing N271-1976, in light of the events of March 28, 1979, at Three Mile Island - Unit 2.

The ANS-56.2 Working Group was reconstituted in August 1979. Upon reviewing this standard, the Working Group found that N271-1976 provides proper guidance for the design of the containment isolation provisions of fluid systems which penetrate the primary containment boundary of light water reactors. It was determined, however, that more specific guidance was required for the actuation of these containment isolation provisions. Accordingly, this revision to N271-1976 contains criteria for containment isolation provisions actuation, including diversity of actuation parameters and the concept of phased isolation.

Other modifications made to this standard include an updating of the references, an updating of Appendix A, the addition of criteria for the protection of the isolation provisions against overpressure from thermal expansion, and the inclusion of criteria for the use of relief valves in the forward flow direction as containment isolation valves.

The purpose of this revision to N271-1976 remains the same as that of the original standard, i.e., to specify minimum design requirements for fluid systems which penetrate the primary containment boundary of light water reactors to provide for isolation of the containment. The objective of the standard is to assist designers of containment isolation provisions in providing systems which meet applicable standards, codes, and regulations. Designers of the fluid systems, containment penetrations, electrical systems, etc., which are involved with a containment isolation function must consider the requirements of the isolation function as well as the fluid system requirements. This standard is also intended to assist the plant operating staff with respect to performance testing and maintenance.

As of November 1983, the membership of ANS-56.2 was:

P. A. Totten, Chairman, *Gibbs & Hill, Incorporated*
R. A. Berry, *Stone & Webster Engineering Company*
R. A. Bruce, *Westinghouse Electric Corporation*
E. V. Imbro, *U.S. Nuclear Regulatory Commission*
J. O. Schuyler, *Pacific Gas & Electric Company*
R. S. Turk, *Combustion Engineering, Inc.*

C. Christensen (General Electric Company) and J.C. Evans (Babcock & Wilcox Company) were also members of the working group during part of the revision process.

This standard provides guidance in satisfying several of the General Design Criteria of Title 10 of the Code of Federal Regulations, Part 50, Appendix A and the systems criteria developed by the ANS NUPPSCO.

This standard considers only a single active failure after the loss-of-coolant accident or any other accident requiring actuation of the same containment isolation provisions. Any other failure requirements are not addressed in this standard. Specific guidance on the single failure for LWR fluid systems is contained in American National Standard Single Failure Criteria for LWR Safety-Related Fluid Systems, ANSI/ANS-58.9-1981.

The Working Group still notes that there is no standard which identifies an explicit list of plant conditions requiring protection system function including containment isolation. It was believed inappropriate for the present standard to develop those conditions requiring containment isolation. The working group has recommended to NUPPSCO that a separate working group should be formed for the purpose of preparing a standard dealing with containment isolation requirements for accidents other than LOCAs, if NUPPSCO believes it is necessary to address the subject of accident isolation.

The appendices are provided to illustrate methods of application of the standard, but are not mandatory or part of the standard. The footnotes are provided for guidance, but are not mandatory or part of the standard.

*The American Nuclear Society's Nuclear Power Plant Standards Committee (NUPPSCO) had the following membership at the time of its approval of this standard in May 1980.

J. F. Mallay, Chairman
M. D. Weber, Secretary

Name of Representative	*Organization Represented*
G. A. Arlotto	*U.S. Nuclear Regulatory Commission*
R. E. Allen (Alt.)	*United Engineers & Constructors, Inc. (for the Institute of Electrical and Electronics Engineers Inc.)*
R. V. Bettinger	*Pacific Gas and Electric Company*
P. Bradbury	*Westinghouse Advanced Reactor Division*
D. A. Campbell	*Westinghouse Electric Corporation*
C. O. Coffer	*Kaiser Engineers*
L. J. Cooper	*Nebraska Public Power District*
W. H. D'Ardenne	*General Electric Company*
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H. J. Green	*Tennessee Valley Authority*
A. R. Kasper	*Combustion Engineering, Inc.*
W. Johnson	*Catalytic, Inc.*
R. W. Keaten	*GPU Services Corporation*
J. W. Lentsch	*Portland General Electric Company*
J. F. Mallay	*Babcock & Wilcox Company (for the American Nuclear Society)*
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T. J. Pashos	*Quadrex/Nuclear Services Corporation*
M. E. Remley	*Rockwell International*
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J. E. Windhorst	*Southern Company Services, Inc.*
E. R. Wiot	*NUS Corporation*

*This roster indicates NUPPSCO members' affiliations at the time of consensus committee ballot.

Contents

Appendices

Tables

Figures