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WITHDRAWN

nuclear safety criteria for the design of stationary pressurized water reactor plants

an American National Standard

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American National Standard Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants

Secretariat

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Approved August 6, 1973

American National Standards Institute, Inc.

American National Standard

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Foreword

(This Foreword is not a part of American National Standard Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants, N18.2-1973.)

Dr. Clifford Beck, of the U.S. Atomic Energy Commision (AEC), went before the Reactor Safety Standards Committee, N6, of United States of America Standards Institute in late 1965 with a request for industry help to develop nuclear safety standards. At the time, the AEC was ready to publish the first version of their General Design Criteria, a framework of broad design objectives and performance goals required for public protection. Dr. Beck wanted industry, with AEC participation, to prepare supplementary criteria to supplement and implement the general design criteria. Objectives advanced included: simplifying and streamlining the licensing procedures, providing a means to obtain industry-wide agreement on objectives, providing a means to uniformly judge the protection afforded the public, and avoiding the necessity of government articulation of such requirements in the form of rulemakings.

A series of drafts was produced but a 1967 review by N6 was highly critical of the result. Responsibility for further work was transferred to a Systems Engineering Subcommittee structured of the ANS Standards Committee and was under the auspices of a new Nuclear Design Criteria Committee, N18, of what is now American National Standards Institute (ANSI). The committee had representatives from utilities, manufacturers, architect-engineers, and from the AEC.

Draft eight was forwarded to N18 where, after a review meeting and balloting, it was eventually approved, based on a revision published in November 1970, and later accepted for "Trial Use and Comment". Collection of comments resulting from trial use was begun in September 1971, and changes, including revision of the classification system, were incorporated into a January 1972 issue. This issue was submitted to N18 for final approval in April 1972. While the resulting ballot included no disapprovals, extensive comments were offered. This necessitated a new version, the January 1973 draft and a re-ballot of N18. An affirmative vote permitted submittal to the ANSI Board of Standards Review, where ANSI approval was granted August 6, 1973, and the standard officially became ANSI N18.2-1973.

By the time the work of generating criteria fell to a single committee, the following guides had general concurrence and were being followed:

(1) The Criteria would deal with both systems and components. Codes and standards usually deal with one or the other.

(2) The prime concern would be *nuclear* safety, with conventional safety continuing under existing codes and standards.

(3) The complexities and interactions in relating a particular component or system to other components, systems, or combinations would be considered.

(4) The criteria would be primarily derived from "present practice" with minimum reliance on innovative approaches.

Major innovation was the defining of safety classes and establishing their relationships to code classes. The originating committee, producing a system limited to fluid system components, built a classification framework for later expansion to other mechanical components and electrical and control equipment. In other areas, the committee included requirements that it fully expected would be covered by other codes or standards in the future, planning deletion of such requirements when they were covered in a more appropriate document. However, the committee knew of no significant conflicts with existing ANSI codes or standards. The principal criticism of the end result may be that of incompleteness in certain areas, since the scope was extremely broad, encompassing the entire nuclear plant.

Since the working committee, ANS-20, had its responsibilities broadened to include the formulation of systems-design criteria for power plants containing pressurized-water, boiling-water, liquid-metal-fueled-breeder, and gas-cooled reactor types and related standards, the continuing responsibilities for N18.2-1973 were transferred to the PWR Subcommittee, ANS-21, upon ANSI approval of N18.2-1973. This Subcommittee, functional since June 1971, has been active in preparing to strengthen the standard.

There was always recognition that the Criteria would never be static, but would

require interpretation and change to fill in scope omissions, to further clarify intents, and to remain compatible with changing licensing requirements. ANS-21 plans to issue revisions from time to time and to periodically consolidate into an updated version so as to improve the viability of the standard as a design instrument and to assure compatibility with other standards. Comments or requests for interpretation should be directed to: Mr. J. D. Crawford, Chairman, ANS-21 Combustion Engineering, Inc., P.O. Box 500, Windsor, CT 06095.

The American National Standards Committee N18, Nuclear Design Criteria, which reviewed and approved this standard in 1973, had the following membership:

L. J. Koch, Chairman
A. H. Redding, Vice Chairman
N. E. Wandke, Secretary

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This standard was prepared by Subcommittee ANS-20, Power Reactor Systems Engineering, of the American Nuclear Society Standards Committee. At the time of approval, the membership of the Subcommittee was:

J.S.Moore, *Chairman, Westinghouse Electric Corp.*
G.A.Arlotto, *U.S. Atomic Energy Commission*
D.A.Campbell, *Secretary, Westinghouse Electric Corp.*
R.L.Ferguson, *U.S. Atomic Energy Commission*
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W.K.Wilhelm, *Combustion Engineering, Inc.*

A significant contribution was also made by the following former members of ANS-20:

E.S. Beckjord, *Former ANS-20 Chairman, Westinghouse Electric Corp.*
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