American Nuclear Society

administrative controls and quality assurance for the operational phase of nuclear power plants

an American National Standard

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

ANSI/ANS-3.2-1994

American National Standard Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants

Secretariat
American Nuclear Society

Prepared by the
American Nuclear Society
Standards Committee
Working Group ANS-3.2

Published by the
American Nuclear Society
555 North Kensington Avenue
La Grange Park, Illinois 60525 USA

Approved December 5, 1994
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 It may be reaffirmed, revised, or withdrawn at any time in accordance with established procedures.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 60525 USA

Printed in the United States of America

Foreword

(This Foreword is not a part of American National Standard Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants, ANSI/ANS-3.2-1994.)

Preparation of the first edition of this standard commenced in 1969, prior to the establishment of formal quality assurance requirements for the operation of nuclear power plants. Historically, the administrative controls section of Facility Operating License Technical Specifications had contained provisions for meeting many of the requirements that subsequently became identified with quality assurance for operation. It was the original intent of the standard to define administrative controls for this purpose. The subcommittee that developed the initial version of this standard had a membership whose experience was primarily in power reactor operation, and developed a document that would provide guidance for administrative controls over activities associated with the operation of nuclear power plants. At the same time, American Society of Mechanical Engineers Subcommittee N45.2, "Nuclear Quality Assurance Standards," was developing quality assurance standards related to design, construction, maintenance, and modification of nuclear power plant structures, systems, and components.

The U.S. Nuclear Regulatory Commission (NRC) issued its Safety Guide 33 (now Regulatory Guide 1.33), "Quality Assurance Program Requirements (Operation)," endorsing Draft 8 of ANS-3.2 (which later became ANSI N18.7-1972) and American National Standard Quality Assurance Program Requirements for Nuclear Power Plants, ANSI/ASME N45.2-1971. Because of this dual endorsement, the two committees attempted to develop a single standard. The result of that effort was ANSI N18.7-1976 (ANS-3.2), which was subsequently endorsed by NRC Regulatory Guide 1.33, Revision 2 (February 1978).

Following the Three Mile Island Unit 2 accident in 1979, Subcommittee ANS-3 undertook a revision of N18.7-1976 to incorporate the administrative "lessons learned" into the standard, which was subsequently published as ANSI/ANS-3.2-1982. This revision also reflected the issuance of American National Standard Quality Assurance Program Requirements for Nuclear Power Plants, ANSI/ASME NQA-1-1979, which superseded several of the N45.2 standards which had previously been incorporated by reference into N18.7-1976.

Since ANSI/ANS-3.2-1982 was published, the industry moved progressively closer to an all-operating-reactor environment. The 1988 version of this standard recognized this fact and incorporated many changes to emphasize operational aspects and performance-based quality assurance techniques. This, the 1994 version, continues the strong emphasis on this approach. It is the intent that this version will continue to receive industry acceptance and be endorsed by the Nuclear Regulatory Commission.

A major effort is underway within the nuclear industry to redefine the approach to quality assurance. The industry is proposing changes to enhance the efficiency and effectiveness of implementing 10 CFR 50 Appendix B in nuclear plant operations, maintenance, and supporting activities. Working Group ANS-3.2 will work with these industry groups in developing the next revision of this standard.

This standard is also consistent with the Advanced Light Water Reactor Utility Requirements Document and can be used by applicants for new plants to describe their QA and Administrative Control programs.

This revision is based on the philosophy that the assurance of quality is the responsibility of the individual performing the task and is not the sole responsibility of the formally established Quality Assurance organization.

Quality verification organizations in this standard act in a measurement and advisory function, monitoring the overall performance of the plant; identifying substandard or anomalous performance, or precursors of potential problems; reporting findings in an understandable form in a timely fashion to a level of line management having the authority

to effect corrective action; and promptly verifying the effectiveness of the corrective action and reporting those verification results back to line management. An effective quality verification organization is technically and performance oriented; it focuses its efforts toward end products as opposed to being concerned only with processes and procedures. The organization should have technical resources available to it, and it should be aggressive in searching for, identifying, and following up on problems.

In addition to describing administrative controls and quality assurance requirements for the operational phase of nuclear power plants, this standard provides suggestions, where appropriate, that should improve the reliability and performance of operating nuclear power plants. The application of this standard to balance-of-plant equipment and activities can be beneficial in enhancing plant reliability and plant safety.

This standard discusses requirements for preoperational tests, while recognizing that these tests fall outside the strict definition of the operational phase. This guidance was included because of the frequent heavy involvement of the operations staff in conducting the preoperational tests, and as a response to requirements to implement the operational quality assurance program prior to the start of the operational phase.

On page iv of the Foreword is a chart showing the comparison of 10 CFR 50 Appendix B criteria with the corresponding sections of this standard.

This revised standard was prepared by Subcommittee ANS-3, Reactor Operations and Support Activities, of the American Nuclear Society Standards Committee. At the time of the revision, the membership of Working Group ANS-3.2 was:

C. H. Moseley, Jr., Chairman, *Performance Development Corporation*
Richard P. Correia, *U. S. Nuclear Regulatory Commission*
C. Eldridge, *Pacific Gas & Electric Company*
T. R. Hencey, *NUS Corporation*
J. A. Honey, *American Nuclear Insurers*
Walter E. Perks, *Entergy Operations, Inc.*
George Pliml, *Commonwealth Edison Company*
W. Doug Reinhart, *EG&G*
Richard E. Reiss, *EG&G*
W. J. Rudolph II, *Quality Applications, Inc.*
Greg Warner, *Management Analysis Company*

In addition, the chairman acknowledges the assistance of S. C. Oldham and R. R. Toole (Carolina Power & Light Company) in the completion of this standard.

At the time of the approval of the standard, Subcommittee ANS-3, Reactor Operations and Support Activities, of the American Nuclear Society Standards Committee had the following membership:

L. E. Davis, Chairman, *Commonwealth Edison Company*
E. Callan, *Philadelphia Electric Company*
J. Doering, *Philadelphia Electric Company*
F. Dougherty, *Tenera, L.P.*
C. Eldridge, *Pacific Gas & Electric Company*
R. Gallo, *U.S. Nuclear Regulatory Commission*
J. A. Honey, *American Nuclear Insurers*
J. F. Mallay, *Liberty Consulting Group*
C. H. Moseley, Jr., *Performance Development Corporation*
S. M. Quennoz, *Portland General Electric Company*
D. Roth, *General Physics Corporation*
W. J. Rudolph II, *Quality Applications, Inc.*
G. Scholand, *Westinghouse Electric Corporation*
R. N. Smith, *Argonne National Laboratory*
P. Walzer, *Public Service Electric & Gas Company*
M. J. Wright, *Entergy Operations, Inc.*

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

W. H. D'Ardenne, Chairman
M. D. Weber, Secretary

R. E. Allen ..... UE&C Nuclear
P. Ballinger ..... Nebraska Public Power District
F. Boorboor ..... Nuclear Placement Services, Inc.
J. C. Bradford ..... Bechtel National, Inc.
T. W. Burnett ..... Westinghouse Electric Corporation
J. D. Cohen ..... Westinghouse Savannah River Company
J. D. Cotton ..... Philadelphia Electric Company
T. A. Daniels ..... Rochester Gas & Electric Corporation
W. H. D'Ardenne ..... GE Nuclear Energy
L. E. Davis ..... Commonwealth Edison Company
S. B. Gerges ..... NUS Corporation, Inc.
D. L. Gillispie ..... Institute of Nuclear Power Operations
R. W. Hardy ..... GE Nuclear Energy
P. H. Hepner ..... ABB/Combustion Engineering Nuclear Power
C. E. Johnson, Jr. ..... U.S. Nuclear Regulatory Commission
J. T. Luke ..... Florida Power & Light Company
J. F. Mallay ..... Liberty Consulting Group
J. A. Nevshemal ..... Raytheon UE&C
W. B. Reuland ..... Electric Power Research Institute
T. T. Robin ..... Southern Company Services, Inc.
J. C. Saldarini ..... Ebasco Services, Inc.
R. E. Scott ..... Scott Enterprises
D. J. Spellman ..... Oak Ridge National Laboratories
S. L. Stamm ..... Stone & Webster Engineering Corporation
J. D. Stevenson ..... Stevenson & Associates
C. D. Thomas, Jr. ..... Yankee Atomic Electric Company
G. P. Wagner ..... Commonwealth Edison Company
N. Weber ..... Sargent & Lundy
R. Weir ..... Tennessee Valley Authority

Comparison Chart
of
10 CFR 50 Appendix B
and
ANSI/ANS-3.2-1994 Requirements

10 CFR 50 Appendix B Criterion	ANSI/ANS-3.2-1994 Sections	Comments
I	1, 3.1, 3.3	
II	3.1, 3.3, 3.4.2, 3.5, 4.4.3.2, 5.1, 5.3	Refs.: for 3.4.2, ANSI/ANS-3.1-1993, ANSI/ASME NQA-1-1994; for 3.5, ANSI/ANS-3.1-1993; for 4.4.3.2, ANSI/ASME NQA-1-1994
III	5.2.9, 5.2.10	Refs.: for 5.2.9, ANSI/ASME NQA-1-1994
IV	5.2.16	Refs. ANSI/ASME NQA-1-1994
V	5.2.9, 5.3	Refs.: for 5.2.9, ANSI/ASME NQA-1-1994, ANSI/ASTM D3843-80
VI	5.2.18	
VII	5.2.16.2	
VIII	5.2.16.3	
IX	5.2.21	
X	5.2.20	
XI	5.2.22	
XII	5.2.19	Refs. ANSI/ASME NQA-1-1994
XIII	5.2.16.4	Refs. ANSI/ASME NQA-1-1994
XIV	5.2.6, 5.2.17	Refs.: for 5.2.17, ANSI/ASME NQA-1-1994
XV	5.2.17	Refs. ANSI/ASME NQA-1-1994
XVI	5.2.14	
XVII	5.2.15	Refs. ANSI/ASME NQA-1-1994
XVIII	4.4.3	Refs. ANSI/ASME NQA-1-1994

Contents

Section **Page**