

# REGULATORY GUIDE

OFFICE OF STANDARDS DEVELOPMENT

## REGULATORY GUIDE 1.64

### QUALITY ASSURANCE REQUIREMENTS FOR THE DESIGN OF NUCLEAR POWER PLANTS

#### A. INTRODUCTION

Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," establishes overall quality assurance requirements for the design, construction, and operation of safety-related structures, systems, and components of nuclear power plants. This guide describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to quality assurance requirements for the design of all types of nuclear power plants. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

#### B. DISCUSSION

Working Group N45-2.11 of the American National Standards Committee N45, Reactor Plants and Their Maintenance, has prepared a standard that delineates requirements and recommendations for establishing and executing a quality assurance program for the design of nuclear power plants. This standard was approved by subcommittee N45-2, Nuclear Quality Assurance Standards, of the American National Standards Institute Committee N45 and the full committee and its secretariat. It was subsequently approved and designated N45.2.11-1974 by the American National Standards Institute on June 6, 1974.

Revision 1 to Regulatory Guide 1.64, which endorsed ANSI N45.2.11-1974, was published in February 1975. As a result of comments received on the guide and additional staff review, the staff has developed Revision 2. The only significant change in the regulatory position involves position C.2 concerning performance of design verification by supervisors.

\*Lines denote substantive changes from previous issue.

#### C. REGULATORY POSITION

The requirements and recommendations for establishing and executing a quality assurance program during the design phase of nuclear power plants that are included in ANSI N45.2.11-1974\* are acceptable to the NRC staff and provide an adequate basis for complying with the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50, subject to the following:

1. Subdivision 1.5 of ANSI N45.2.11-1974 states that other documents that are required to be included as a part of this standard will be identified at the point of reference and described in Section 12 of the standard. The specific acceptability of these listed documents has been or will be covered separately in other regulatory guides or in Commission regulations where appropriate.

2. Instead of the second sentence of the second paragraph of Section 6.1 on design verification, the following should be used: "The duties of a 'supervisor' and the relationship with subordinates vary widely in different organizations. Regardless of their title, individuals performing design verification should not (1) have immediate supervisory responsibility for the individual performing the design, (2) have specified a singular design approach, (3) have ruled out certain design considerations, or (4) have established the design inputs for the particular design aspect being verified. While design verification by the designer's immediate supervisor is encouraged, it should not be construed that such verification constitutes the required independent design

\*ANSI N45.2.11-1974, "Quality Assurance Requirements for the Design of Nuclear Power Plants," may be obtained from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017.

#### USNRC REGULATORY GUIDES

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Comments and suggestions for improvements in these guides are encouraged at all times, and guides will be revised, as appropriate, to accommodate comments and to reflect new information or experience. This guide was revised as a result of substantive comments received from the public and additional staff review.

Comments should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Attention: Docketing and Service Section.

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verification, nor should the independent design verification be construed to dilute or replace the clear responsibility of supervisors for the quality of work performed under their supervision."

3. In the first sentence of Section 8 of N45.2.11-1974, the word "effecting" should be inserted before "design changes" for clarification. Further, the term "approved design documents" should be construed to mean "design output" (see Section 1.4) approved by the organization performing the design.

4. Sections 4.3, 4.4, and 4.5 of N45.2.11-1974 concern the establishment of procedures for the preparation and control of drawings, specifications, and other design documents. These sections list typical subjects to be covered by such procedures. One of the subjects to be covered is "nonconformances." The NRC staff considers the "nonconformances" listed in these sections to be nonconformances with procedural requirements. Thus in Section 4.3, item (11), "Nonconformance with drawing requirements," should be construed to mean "Nonconformance with procedures for the preparation and control of drawings;" in Section 4.4, item (7), "Nonconformance with specification requirements," should be

construed to mean "Nonconformance with procedures for the preparation and control of specifications;" and in Section 4.5, item (7), "Nonconformance with design document requirements," should be construed to mean "Nonconformance with procedures for the preparation and control of design documents."

#### D. IMPLEMENTATION

The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for using this regulatory guide.

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used in the evaluation of submittals in connection with construction permit applications docketed after July 15, 1976.

If an applicant wishes to use this regulatory guide in developing submittals for applications docketed on or before July 15, 1976, the pertinent portions of the application will be evaluated on the basis of this guide.



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