



U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation

***NRR OFFICE INSTRUCTION***

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**Change Notice**

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Office Instruction No.: **LIC-100, Revision 1**

Office Instruction Title: **Control of Licensing Bases for Operating Reactors**

Effective Date: **January 7, 2004**

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Responsible Organization: **NRR/DLPM/LPD3**

**Summary of Changes:** Changes in Revision 1 of LIC-100, "Control of Licensing Bases for Operating Reactors," include an expanded discussion of the General Design Criteria (GDC), revision of Technical Specifications Bases section, updating of Fire Protection Programs section, and addition of section discussing the threshold for license amendments.

Training: **E-mail announcement with recommended self-study**

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### **2.1.5.7 Appendix A, "General Design Criteria"**

Pursuant to the provisions of 10 CFR 50.34, "Contents of applications; technical information," an applicant for a construction permit must include the principal design criteria for a proposed facility. The General Design Criteria (GDC) establish minimum requirements for the principal design criteria for water-cooled nuclear power plants. For the most part, a plant's compliance with the GDC was verified during the original licensing process. Although the GDC may be viewed as legally binding on licensees (in the absence of an approved alternative design bases), issues associated with licensing, inspection or enforcement are usually tied to more explicit NRC requirements (technical specifications or specific regulations).

The General Design Criteria are not applicable to plants with construction permits issued prior to May 21, 1971. At the time of the promulgation of Appendix A, the Commission stressed that the GDC were not new requirements and were promulgated to more clearly articulate the licensing requirements and practice in effect at that time. While compliance with the intent of the GDC is important, each plant licensed before the GDC were formally adopted was evaluated on a plant specific bases, determined to be safe, and licensed by the Commission. Furthermore, current regulatory processes are sufficient to ensure that plants continue to be safe and comply with the intent of the GDC.

A useful white paper describing the GDC and their relationship to elements of the licensing bases, especially the Technical Specifications, is provided in Attachment 2.

### **2.1.5.8 Appendix B, "Quality Assurance Criteria for Nuclear Power Plants"**

A discussion of licensee-specific quality assurance programs used to implement the requirements of Appendix B is included in Section 3, Mandated Licensing Bases Documents. The requirements of Appendix B are included here to stress the importance of the provisions in the appendix in binding together and filling gaps in regulations governing safety-related SSCs. Appendix B consists of 18 criteria and provides requirements related to quality assurance programs, procurement, design, document control, testing, audits, and corrective actions. Additional information on Appendix B and its implementation can be found in licensee quality assurance programs, referenced industry codes and standards, and NRC regulatory guides.

## **2.2 Operating License & Technical Specifications**

Licenses have been issued under two separate sections of the Atomic Energy Act of 1954, as amended (AEA): a commercial license under Section 103 and a research and development license under Section 104b. Prior to the 1970 amendments to the AEA, a Section 103 license required a finding of "practical value." The Atomic Energy Commission (AEC) would have based a finding of "practical value" for a type of reactor on a reliable estimate of its economics, based upon a demonstration of the technology and plant performance. In addition, after an AEC finding of "practical value" for a particular type of reactor, licenses issued under Section 103 were subject to a prelicensing review to determine if the proposed license would tend to create or maintain a situation inconsistent with antitrust laws. At that time, the AEC did not believe that it had sufficient information to make the "practical value" finding and all licenses were issued

Attachment 2  
General Design Criteria and Regulatory Process

The requirements for the technical content of applications for nuclear power plants in 10 CFR 50.34(a) describe how the General Design Criteria (GDC) are to be addressed in the preliminary safety analysis report for a construction permit, which carry over to the final safety analysis report from which the NRC establishes the licensing basis, as maintained in the UFSAR, and the content of the technical specifications under §50.36, for issuance of an operating license.

The Standard Review Plan (SRP) describes how the staff evaluates the proposed plant design and operation, usually by referring to more detailed guidance in Regulatory Guides and/or industry standards, which elaborate on the provisions of the GDC. The results of that evaluation are documented in a safety evaluation report (SER) which must conclude that there is "reasonable assurance that the proposed plant design and operation will not pose an undue risk to public health and safety" before an operating license can be granted.

Under §50.57, the Commission issues an operating license upon a finding that " ... (2) The facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and (3) There is reasonable assurance (i) that the activities authorized by the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this chapter ..." The license includes those license conditions which, in conjunction with the conditions specified in §50.54, provide the basis for the Commission to issue the license based on the foregoing finding. By virtue of the finding made at the time of licensing, the plant is considered safe until the plant is found to be in violation (of the regulations, license, license conditions, or technical specifications), or the NRC takes some action to change the license requirements or licensing basis.

After issuance of an operating license, the UFSAR maintains the details of the licensing basis and the plant design, and changes to the licensing basis can be made without prior NRC approval as provided in §50.59. The SER can be used to clarify whether there are particular aspects of the design basis described in the UFSAR that are significant to the reasonable assurance of safety. The technical specifications include, among other things, "the lowest functional capability or performance levels of equipment required for safe operation of the facility" (§50.36(c)(2)), but there is no specific provision for "compliance with the GDC" after the issuance of a license (See memorandum from T. Murley to J. Taylor, Relationship Between the General Design Criteria (GDC) and Exceptions to the GDC Allowed by Technical Specifications, August 1, 1993; ADAMS Legacy Library - Accession No. 9310290130 )

In the SRM for SECY-92-223, dated 9/18/92, the Commission decided not to apply the GDC to plants with construction permits issued prior to 5/21/71. Plants that were licensed before the GDC were promulgated in 1971 are presumed to comply with the intent of the GDC because those licenses were granted using comparable evaluation criteria.

When questions arise about the adequacy of the plant design or the safety standards used for the granting of the license, the GDC are typically referred to as a baseline of the design capabilities associated with the licensing basis. If the staff determines that the safety evaluation basis for the design capabilities (as described in the associated SRP or the Reg Guides) need to be modified to ensure safe plant operations, backfitting decisions have to consider the range of capabilities in the plant licensing bases when deciding whether to require that existing licenses need to be modified.

The staff evaluates new information and technological advancements that may have a bearing on the standards used to assess plant safety under the Generic Issues Program (Management Directive 6.4). The staff also gathers information from the Licensee Oversight Program, primarily from the Abnormal Occurrence Reporting Procedure (Management Directive 8.1) and the event evaluation process (Management Directive 8.3). The results of these processes can result in generic communications (Management Directive 8.18 and NRR Office Instruction LIC-503), plant-specific backfits or §50.54(f) demands for information (Management Directive 8.4 and the NRR Project Managers' Handbook) or rulemaking (Management Directive 6.3, NRR Office Instruction LIC-300 and the Regulations Handbook, NUREG/BR-0053).

If the staff determines that a design feature associated with the GDC needs to be modified for all plants, the imposition of that design change is generally imposed by rule change or an order modifying the license, not an action to require "compliance with the GDC." For example, in EA-03-009 requiring vessel inspections beyond those in the ASME Code that would constitute compliance with §50.55a, the Order is justified as "in order to provide reasonable assurance of adequate protection of public health and safety in the interim period" [until the ASME Code and/or §50.55a can be modified], not on the basis of "in order to comply with GDC 14." It is important to note that operational features like inspection and surveillance requirements usually can be more easily resolved than design features because the plant technical specifications include the important limiting conditions for operation and surveillance requirements.