

THIS DRAFT DOCUMENT IS BEING RELEASED TO SUPPORT THE FEBRUARY 18, 2022, ADVISORY COMMITTEE ON REACTOR SAFEGUARDS (ACRS) 10 CFR PART 50/52 RULEMAKING ACTIVITIES SUBCOMMITTEE PUBLIC MEETING. THE NRC STAFF IS NOT REQUESTING OR ACCEPTING PUBLIC COMMENTS ON THIS DRAFT DOCUMENT. THIS DRAFT DOCUMENT HAS NOT BEEN SUBJECT TO NRC MANAGEMENT OR LEGAL REVIEWS AND APPROVALS, AND ITS CONTENTS SHOULD NOT BE INTERPRETED AS OFFICIAL AGENCY POSITIONS. FOLLOWING THE PUBLIC MEETING WITH THE ACRS, THE NRC STAFF PLANS TO CONTINUE WORKING ON THIS DOCUMENT AND TO CONSIDER OPTIONS FOR INVITING PUBLIC PARTICIPATION IN THE RULEMAKING ACTIVITY.

U.S. NUCLEAR REGULATORY COMMISSION

DRAFT REGULATORY GUIDE DG-1384



Proposed Revision 5 Regulatory Guide 1.149

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NUCLEAR POWER PLANT SIMULATION FACILITIES FOR USE IN OPERATOR TRAINING, LICENSE EXAMINATIONS, AND APPLICANT EXPERIENCE REQUIREMENTS

A. INTRODUCTION

Purpose

This guide describes a method that the staff of the U.S. Nuclear Regulatory Commission (NRC) considers acceptable to implement those portions of the Commission's regulations associated with approval or acceptance of a nuclear power plant simulation facility for use in operator and senior operator training and license examination operating tests and for meeting applicant experience requirements.

Applicability

This regulatory guide (RG) applies to applicants and licensees under Title 10, of the *Code of Federal Regulations*, Part 55, "Operators' Licenses" (10 CFR Part 55) (Ref. 1).

Applicable Regulations

Title 10, of the *Code of Federal Regulations*, Part 55, "Operators' Licenses" (10 CFR Part 55) defines the term "simulation facility" in 10 CFR 55.4, "Definitions," as meaning one or more of the following components, alone or in combination, used for either the partial conduct of operating tests for

This RG is being issued in draft form to involve the public in the development of regulatory guidance in this area. It has not received final staff review or approval and does not represent an NRC final staff position. Public comments are being solicited on this DG and its associated regulatory analysis. Comments should be accompanied by appropriate supporting data. Comments may be submitted through the Federal-rulemaking Web site, <http://www.regulations.gov>, by searching for draft regulatory guide DG-4031 or Docket ID NRC-2009-0196. Alternatively, comments may be submitted to Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff. Comments must be submitted by the date indicated in the *Federal Register* notice.

Electronic copies of this DG, previous versions of DGs, and other recently issued guides are available through the NRC's public Web site under the Regulatory Guides document collection of the NRC Library at <https://nrcweb.nrc.gov/reading-rm/doc-collections/reg-guides/>. The DG is also available through the NRC's Agencywide Documents Access and Management System (ADAMS) at <http://www.nrc.gov/reading-rm/adams.html>, under Accession No. ML21263A127. The regulatory analysis may be found in ADAMS under Accession No. ML **XXXXXXXXXX**.

operators, senior operators, and license applicants, or to establish on-the-job training and experience prerequisites for operator license eligibility: (1) a plant-referenced simulator, (2) a Commission-approved simulator under 10 CFR 55.46(b), or (3) another simulation device, including part-task and limited scope simulation devices, approved under 10 CFR 55.46(b). In particular, 10 CFR 55.46, "Simulation Facilities," addresses the use of a simulation facility for the administration of the operating test and plant-referenced simulators to meet experience requirements for applicants for operator and senior operator licenses. In addition, 10 CFR 55.59, "Requalification," addresses, in part, the use of a simulation facility to perform required control manipulations and plant evolutions not performed at the plant for on-the-job training of licensed operator and senior operators.

Purpose of Regulatory Guides

The NRC issues RGs to describe methods that are acceptable to the staff for implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific issues or postulated events, and to describe information that the staff needs in its review of applications for permits and licenses. Regulatory guides are not NRC regulations and compliance with them is not required. Methods and solutions that differ from those set forth in RGs are acceptable if supported by a basis for the issuance or continuance of a permit or license by the Commission.

Paperwork Reduction Act

This regulatory guide provides voluntary guidance for implementing the mandatory information collections in 10 CFR Part 55 that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et. seq.). These information collections were approved by the Office of Management and Budget (OMB), approval numbers 3150-0011 and 3150-0151 respectively. Send comments regarding this information collection to the FOIA, Library, and Information Collections Branch (T6-A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the OMB reviewer at: OMB Office of Information and Regulatory Affairs (3150-0011, 3150-0151), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street, NW Washington, DC 20503; e-mail: oira_submission@omb.eop.gov.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

B. DISCUSSION

Reason for Revision

The NRC amended the criteria in Title 10 of the *Code of Federal Regulations*, Part 55, “Operators Licenses” (10 CFR Part 55), as a result of recent experience licensing operators at new nuclear reactors that are under construction. Specifically, the NRC amended the criteria that a plant-referenced simulator must meet when it will be used by operator license applicants at nuclear power plants that are under construction to complete the control manipulations required by 10 CFR 55.31(a)(5). The NRC also amended the definitions of “plant-referenced simulator” and “reference plant” in 10 CFR 55.4 to clarify that these terms are also applicable to simulators that model nuclear power plants that are under construction. Revision 5 of this guide reflects the amended criteria and definitions.

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In March 1987, the Commission amended its regulations requiring all utilization facility licensees to have a simulation facility (either a “plant-referenced simulator” or an “other than a plant-referenced simulator”) by May 26, 1991, for use in administering NRC operating tests and licensed operator requalification training (Volume 52, page 9460, of the *Federal Register* (52 FR 9460; March 25, 1987)) (Ref. 2).

In October 2001, the NRC amended its regulations to permit facility licensee applicants for operator’s licenses to fulfill a portion of the required experience prerequisites by manipulating a plant-referenced simulator as an alternative to manipulating the controls of the actual nuclear power plant (66 FR 52667; October 17, 2001) (Ref. 3). The final rule became effective November 16, 2001.

Also in October 2001, the staff issued Revision 3 of Regulatory Guide 1.149, “Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations” (Ref. 4). This guide endorsed the industry’s previously adopted consensus standard, American National Standards Institute/American Nuclear Society (ANSI/ANS) 3.5-1998, “Nuclear Power Plant Simulators for Use in Operator Training and Examination,” dated April 15, 1998 (Ref. 5), as well as two historical editions, ANSI/ANS 3.5-1993, dated March 29, 1993 (Ref. 6), and ANSI/ANS 3.5-1985, dated October 25, 1985 (Ref. 7), as methods acceptable to the NRC staff for implementing specific parts of the Commission’s regulations and techniques used by the staff in evaluating compliance.

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Background

In March 1987, the Commission amended its regulations requiring all utilization facility licensees to have a simulation facility (either a “plant-referenced simulator” or an “other-than-a-plant-referenced simulator”) by May 26, 1991, for use in administering NRC operating tests and licensed operator requalification training (Volume 52, page 9460, of the *Federal Register* (52 FR 9460; March 25, 1987)) (Ref. 2).

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Operator Training and Examination,” dated April 15, 1998 (Ref. 5), as well as two historical editions, ANSI/ANS-3.5-1993, dated March 29, 1993 (Ref. 6), and ANSI/ANS-3.5-1985, dated October 25, 1985 (Ref. 7), as methods acceptable to the NRC staff for implementing specific parts of the Commission’s regulations and techniques used by the staff in evaluating compliance.

As a result of the regulatory experience gained since with Revision 3 of Regulatory Guide 1.149, this new Revision 4 of the guide updates updated and clarifies clarified the scope of the guideline to better serve simulation facility licensees and the regulatory community. The guide helps and also to ensure that simulation facilities used to meet the requirements of 10 CFR Part 55 are sufficient in both scope and fidelity for the regulatory purposes for which they are being used with respect to (1) operating tests, as described in 10 CFR 55.45(a), (2) licensed operator requalification training requirements, as described in 10 CFR 55.59, and (3) performance of control manipulations that affect reactivity to establish eligibility for an operator’s license, as described in 10 CFR 55.31(a)(5).

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Role of Nuclear Power Plant Simulation Facilities in Operator Licensing

Facility licensees are responsible for ensuring that individuals who receive operator or senior operator licenses have the knowledge, skills, and abilities necessary to operate the nuclear facility safely and competently. Since 1991, the NRC and facility licensees have been using nuclear power plant simulation facilities to determine whether an applicant for an operator’s license has learned to operate a facility competently and safely, and, in the case of a senior operator, whether an applicant has learned to direct the licensed activities of licensed operators competently and safely. Currently, 72 full scope plant referenced simulators are in service for use in meeting the regulatory needs of approximately 4,500 licensed operators manning 104 commercial nuclear power plants operating in the United States. When applicants are tested and evaluated on a plant-referenced simulator, major facility differences are minimized between the testing and operating environments. As a result, NRC examiners are able to make pass-fail judgments with confidence.

Facility licensees are required to request approval from the Commission should they propose to use other than a plant-referenced simulator in the operating test. Absent the use of plant-referenced simulators, operator licensing regulatory requirements would be much more difficult to meet since Commission-approved simulation facilities and Commission approval of the use of the actual plant would require the Commission to find that the simulation facility and its proposed use, or the proposed use of the plant, are suitable for the conduct of operating tests.

The staff anticipates that additional nuclear power plant simulation facilities will be placed into service to meet future operator licensing needs with the advent of new nuclear power plants. This guide also applies to the use of new full-scope nuclear power plant simulation facilities when used to meet 10 CFR Part 55 operator licensing requirements.

Plant-Referenced Simulator Performance Testing

The guidance in this topical area ensures a more uniform and consistent approach to performance testing of a plant-referenced simulator. The Commission’s regulations in 10 CFR 55.4 define the following three terms, which are very important to understanding the staff’s perspective on simulator performance testing:

1. “Performance testing” means testing conducted to verify a simulation facility’s performance as compared to actual or predicted reference plant performance.

2. “Plant-referenced simulator” means a simulator modeling the systems of the reference plant with which the operator interfaces, or for a plant that is being constructed, will interface in the control room, including operating consoles, and which permits use of the reference plant’s procedures.
3. “Reference plant” means the specific nuclear power plant from which a simulation facility’s control room configuration, system control arrangement, and design data are derived. The reference plant may or may not be actually constructed.

The simulator must meet specific regulatory requirements, as described in 10 CFR 55.46(c) and 10 CFR 55.46(d), for the Commission to accept a simulation facility consisting solely of a plant-referenced simulator for conducting operating tests, as described in 10 CFR 55.45(a) and 10 CFR 55.59(a)(2); for requalification training, as described in 10 CFR 55.59(c)(3); or for performing control manipulations that affect reactivity to establish eligibility for an operator’s license, as described in 10 CFR 55.31(a)(5). Specifically, 10 CFR 55.46(c) prescribes the minimum scope and fidelity requirements for a plant-referenced simulator, while 10 CFR 55.46(d) prescribes the performance testing requirements necessary for continued assurance of simulator fidelity.

The underlying purpose of the performance testing requirement is to ensure that plant-referenced simulators (when used to meet operator licensing requirements) demonstrate on a continuing basis (1) expected plant response to operator input and to normal, transient, and accident conditions to which the simulator has been designed to respond, and (2) sufficiency in scope and fidelity to allow conduct of the evolutions associated with operating test content and licensed operator requalification program on-the-job training, applicable to the design of the reference plant. Additionally, the Commission’s regulations in 10 CFR 55.46(c)(2) require that facility licensees that propose to use a plant-referenced simulator to meet the experience requirements in 10 CFR 55.31(a)(5) ensure that (1) the plant-referenced simulator utilizes models relating to nuclear and thermal-hydraulic characteristics that either replicate the most recent core load in the nuclear power reference plant for which a license is being sought, or, prior to initial fuel load, replicate the intended initial core load for the nuclear power reference plant for which a license is being sought; and (2) simulator fidelity has been demonstrated so that significant control manipulations are completed without procedural exceptions, simulator performance exceptions, or deviation from the approved training scenario sequence.

ANSI/ANS-3.5-2009, “Nuclear Power Plant Simulators for Use in Operator Training and Examination”

On September 4, 2009, ANSI approved ANSI/ANS-3.5-2009, “Nuclear Power Plant Simulators for Use in Operator Training and Examination” (Ref. 8), as an American National Standard. The ANSI Standards Committee Working Group ANS-3.5 developed and approved this industry consensus standard. The 2009 version is the sixth issuance of the standard since its initial approval in 1979. The revised standard received substantial support from a diverse and dedicated group of professionals, representing many utilities and interested parties, experienced in the use of full-scope nuclear power plant simulators. The ANS-3.5 Working Group comprised a wide range of utility, independent and industry oversight organizations (including official representatives from the Institute of Nuclear Power Operations and the NRC) during the development of the revised standard.

The revised standard continues to establish the functional requirements for full-scope nuclear power plant control room simulators for use in operator training and examination, as well as criteria for the scope of simulation, performance, and functional capabilities of simulators. In addition to enhanced readability, users of the revised standard will find improvements and clarifications in simulator scenario-based performance testing, new sections addressing simulator core performance testing and post-

event simulator testing, and other important guidance required to ensure accurate simulation for use in operator training and examination.

NEI 09-09, “Nuclear Power Plant-Referenced Simulator Scenario Based Testing Methodology”

On December 11, 2007 (Ref. 9), the NRC and the Nuclear Energy Institute (NEI) Licensed Operator Focus Group agreed, in principle, on a methodology for performing, evaluating, and documenting simulator scenario-based testing (SBT) that facilitates implementation of a standardized approach to SBT mutually acceptable to both parties.

On December 8, 2009, NEI provided for NRC review and endorsement its industry guidance document, NEI-09-09, Revision 1, “Nuclear Power Plant-Referenced Simulator Scenario Based Testing Methodology” (Ref. 10), which provides an equitable and consistent approach and methodology for the conduct and documentation of SBT, as described in Section 4.4.3.2, “Simulator Scenario-Based Testing,” of ANSI/ANS-3.5-2009.

Consideration of International Standards

The International Atomic Energy Agency (IAEA) works with member states and other partners to promote the safe, secure, and peaceful use of nuclear technologies. The IAEA develops Safety Requirements and Safety Guides for protecting people and the environment from harmful effects of ionizing radiation. This system of safety fundamentals, safety requirements, safety guides, and other relevant reports reflects an international perspective on what constitutes a high level of safety. To inform its development of this RG, the NRC considered IAEA Safety Requirements and Safety Guides pursuant to the Commission’s “International Policy Statement,” published in the Federal Register on July 10, 2014 (Ref. 11), and Management Directive and Handbook 6.6, “Regulatory Guides,” dated May 2, 2016 (Ref. 12).

The NRC staff did not identify any IAEA Safety Requirements or Guides with information related to the topic of this RG.

Documents Discussed in Staff Regulatory Guidance

This RG addresses, in part, the use of one or more codes or standards developed by external organizations, and other third party guidance documents. These codes, standards and third party guidance documents may contain references to other codes, standards or third party guidance documents (“secondary references”). If a secondary reference has itself been incorporated by reference into NRC regulations as a requirement, then licensees and applicants must comply with that standard as set forth in the regulation. If the secondary reference has been endorsed in a RG as an acceptable approach for meeting an NRC requirement, then the standard constitutes a method acceptable to the NRC staff for meeting that regulatory requirement as described in the specific RG. If the secondary reference has neither been incorporated by reference into NRC regulations nor endorsed in a RG, then the secondary reference is neither a legally-binding requirement nor a “generic” NRC approved acceptable approach for meeting an NRC requirement. However, licensees and applicants may consider and use the information in the secondary reference, if appropriately justified, consistent with current regulatory practice, and consistent with applicable NRC requirements.

C. STAFF REGULATORY GUIDANCE

1. Use of Voluntary Consensus Standards

The National Technology Transfer and Advancement Act of 1995 (Pub. L. 104-113) (Ref. 13) requires that Federal agencies use technical standards developed or adopted by voluntary consensus standard bodies unless the use of such a standard is inconsistent with applicable law or otherwise impractical. NRC representatives participated in the development of ANSI/ANS-3.5-2009 in support of its mission and to encourage industry to develop a standard that the NRC can endorse and industry (e.g., simulation facility licensees) can voluntarily carry out.

2. NRC Acceptance and Endorsement of ANSI/ANS-3.5-2009

In general, the NRC accepts and endorses industry consensus standards through incorporation by reference in regulations and through reference in such documents as regulatory guides, NUREG reports, standard review plans, and technical specifications. The NRC recognizes that the designation of ANSI/ANS-3.5-2009 as an American National Standard attests that the principles of openness and due process have been followed in its approval and that a consensus of those directly and materially affected by the standard has been achieved. Therefore, the agency's sponsoring office, the Office of Nuclear Reactor Regulation (NRR), through reference in this regulatory guide, accepts and endorses ANSI/ANS-3.5-2009 as described below. The clarifications outlined in the following paragraphs apply to the Commission's endorsement of ANSI/ANS-3.5-2009.

a. ANSI/ANS-3.5-2009 sets forth provisions acceptable to the NRC staff for (1) addressing minimum design, testing, performance, and configuration criteria for a full-scope plant-referenced simulator, (2) comparing a simulator to its reference plant, (3) upgrading a simulator to reflect changes to reference plant response or control room configuration, and (4) improving simulator fidelity. As such, ANSI/ANS-3.5-2009 provides methods acceptable to the NRC staff for a facility licensee to demonstrate that, through meeting the criteria of the standard, a plant-referenced simulator will be sufficiently complete and accurate to meet the requirements of 10 CFR 55.46. Although the scope statement of ANSI/ANS-3.5-2009 is limited to the use of full-scope nuclear power plant simulators in operator training and examination, the staff has concluded that simulators meeting this standard should also be satisfactory for meeting the applicant experience requirements described in 10 CFR 55.31(a)(5).

b. In regard to Section 3.1.4, "Malfunctions," 10 CFR 55.46(d)(1) allows simulation facility licensees to discard malfunction performance tests and test results after 4 years or until superseded by updated test results.

Additionally, previous certification of completed simulator malfunction performance tests and results through Form NRC-474, "Simulation Facility Certification," submittals is sufficient evidence that the required malfunction testing has been conducted at least once within the life of the simulator as referenced in NEI-09-09, Revision 1, Section 2, Recommendation Number 4. Through its endorsement of NEI-09-09, Revision 1, without exceptions, the staff concludes that the SBT methodology should provide sufficient assurance that ANS-3.5 required malfunctions remain suitable should they be used for the conduct of licensed operator requalification or initial operating test evolutions.

c. In regard to Section 3.4.1, "Simulator Verification Testing," and Section 3.4.2, "Simulator Validation Testing," the NRC neither expects nor requires the standard's quality assurance methodology (during software model development in a controlled configuration environment) to be included in the facility licensee's quality assurance program, as described in Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of

Production and Utilization Facilities” (Ref. 14). Appendix B does not apply to simulation facilities as defined in and used for meeting 10 CFR Part 55 requirements.

d. In regard to Section 3.4.3.2, “Simulator Scenario-Based Testing,” simulation facility licensees should meet the requirements of the standard with respect to the following type of SBTs for inclusion as simulator performance tests: (1) NRC initial license examination (operating test) scenarios, (2) licensed operator requalification annual examination (operating test) simulator scenarios, and (3) scenarios used for performing applicant control manipulations that affect reactivity to establish eligibility for an operator’s license. All other operator and senior operator training simulator scenarios (such as just-in-time training and routine plant system and equipment startup and shutdown training) are excluded from SBT for purposes of meeting the standard’s SBT requirements.

e. In regard to Section 4.4.3.2, “Simulator Scenario-Based Testing,” simulation facility licensees should also adhere to the NEI standardized approach for the conduct, performance, and documentation of simulator SBT, as described in NEI 09-09, Revision 1. The NRC expects licensees to perform simulator performance testing described in Section 4.4.3.1 (“Simulator Operability Testing”), Section 4.4.3.3 (“Simulator Reactor Core Performance Testing”), and Section 4.4.3.4 (“Post-Event Simulator Testing”) separately and independently from the testing described in Section 4.4.3.2.

f. In regard to Section 4.4.3.3, “Simulator Reactor Core Performance Testing,” simulation facility licensees should meet the requirements of the standard with respect to real time during the conduct of core evolutions performed in accordance with reference unit procedures. The NRC expects a facility licensee’s plant-referenced simulator at operating reactors to use models relating to nuclear and thermal-hydraulic characteristics that replicate a core load in the nuclear power reference plant. If the plant-referenced simulator is used to meet NRC applicant experience requirements, as described in 10 CFR 55.31(a)(5), then, at operating reactors, the most recent core load (e.g., the current reference plant core load, or if the reference plant is in a refueling outage, the core load just previous to the outage) in the nuclear power reference plant for which a license is being sought must be utilized. At reactors that are under construction and have not yet loaded fuel, the intended initial core load for the nuclear power reference plant for which a license is being sought must be utilized (i.e., the first core load design that is intended to be loaded at the time the experience requirements will be met).

g. In regard to Section 4.4.3.4, “Post-Event Simulator Testing,” simulation facility licensees should meet the requirements of the standard with respect to demonstrating that the plant-referenced simulator’s performance and response compares favorably to the reference plant’s performance and response without significant deviation from the sequence of events for the reference plant event. Simulation facility licensees are encouraged, but not required, to conduct post-event simulator testing within 120 days of the actual reference plant event.

3. NRC Acceptance and Endorsement of NEI-09-09, Revision 1

The NRC staff has reviewed NEI-09-09, Revision 1, and finds the implementation guidance an acceptable method for simulation facility licensees to demonstrate their compliance with the requirements of Sections 3.4.3.2 and 4.4.3.2 of ANSI/ANS-3.5-2009 regarding simulator SBT. Therefore, the NRC accepts and endorses NEI-09-09 as an acceptable method for an equitable and consistent approach and methodology for the conduct and documentation of SBT, as described in ANSI/ANS-3.5-2009.

4. Acceptability of Licensee’s Simulation Facility

Licensees that maintain simulation facilities certified under previous editions of ANSI/ANS-3.5 (1998, 1993, and 1985) endorsed by the NRC are encouraged to, but are not required to, revise the

software and testing documentation to maintain the simulation facility in accordance with ANSI/ANS-3.5-2009. The NRC expects that a simulation facility will be maintained in accordance with a single version of the standard, preferably ANSI/ANS-3.5-2009.

5. Use of Simulation Facility for Multiple Plants

a. If a simulation facility licensee desires to use its plant-referenced simulator to train and or examine operators and senior operators for more than one nuclear power plant (other than the reference plant), the licensee must be able to demonstrate to the NRC staff that the differences between the nuclear power plants are not so significant that they will result in negative training. This demonstration should include an analysis and summary of the differences between each nuclear power plant, including the following:

- facility design and systems relevant to control room personnel
- technical specifications
- procedures, primarily abnormal and emergency operating procedures
- control room design and instrument control location
- operational characteristics

b. The NRC will administer operating tests only on a plant-referenced simulator that meets the Commission's requirements, as described in 10 CFR 55.46. In addition, a licensee must request Commission approval if the licensee plans to administer the NRC operating test using other than a plant-referenced simulator or the actual plant.

6. Use of Other Simulation Devices

If a simulation facility licensee desires to use other simulation devices, including part-task and limited scope simulation devices, approved under 10 CFR 55.46(b) to train and or examine operators and senior operators, the licensee must be able to demonstrate to the NRC staff that use of such devices will not result in negative training. The NRC staff recognizes that other simulation devices not approved under 10 CFR 55.46(b) are being used extensively to supplement operator and senior operator training in classroom settings or on personal computers or both. The NRC acknowledges the use of other simulation devices when simulation models have been derived directly from the facility licensee's plant-referenced simulator.

D. IMPLEMENTATION

The purpose of this section is to provide information on how applicants and licensees¹ may use this guide and information regarding the NRC's plans for using this RG. In addition, it describes how the NRC staff has complied with the Backfit Rule, 10 CFR 50.109 and any applicable finality provisions in 10 CFR Part 52 (Ref. 15).

Applicant and Licensees' Use

Applicants and licensees may (i.e., voluntarily) use the information in this RG to develop applications for initial licenses, amendments to licenses, or other requests for NRC regulatory approval (e.g., exemptions). Licensees may use the information in this RG for actions which do not require prior NRC review and approval (e.g., changes to a facility design under 10 CFR 50.59 which do not require prior NRC review and approval). Licensees may use the information in this RG or applicable parts to resolve regulatory or inspection issues (e.g., by committing to comply with provisions in the RG).

Current licensees may continue to use the guidance that was found acceptable for complying with specific portions of the regulations as part of their license approval process, which may be a previous version of this RG.

A licensee who believes that the NRC staff is inappropriately imposing this RG as part of a request for a license amendment or request for a change to a previously issued NRC regulatory approval may file a backfitting appeal with the NRC in accordance with applicable procedures.

NRC Staff Use

The NRC staff does not intend or approve any imposition or backfitting of the guidance in this RG. The staff does not expect any existing licensee to use or commit to using the guidance in this RG in the absence of a licensee-initiated change to its licensing basis. The NRC staff does not expect or plan to request licensees to voluntarily adopt this RG to resolve a generic regulatory issue. The NRC staff does not expect or plan to initiate NRC regulatory action which would require the use of this RG (e.g. issuance of an order requiring the use of the RG, requests for information under 10 CFR 50.54(f) as to whether a licensee intends to commit to use of this RG, generic communication, or promulgation of a rule requiring the use of this RG) without further backfit consideration.

During inspections of specific facilities, the staff may suggest or recommend that licensees consider various actions consistent with staff positions in this RG, as one acceptable means of meeting the underlying NRC regulatory requirement. Such suggestions and recommendations would not ordinarily be considered backfitting even if prior versions of this RG are part of the licensing basis of the facility with respect to the subject matter of the inspection. However, unless this RG is part of the licensing basis for a plant, the staff may not represent to the licensee that the licensee's failure to comply with the positions in this RG constitutes a violation.

If an existing licensee seeks a license amendment or change in an already approved area of NRC regulatory concern, the NRC staff's consideration of the request involves a regulatory issue directly relevant to this revised RG, and the specific subject matter of the new or revised guidance is an essential consideration in the NRC staff's determination of the acceptability of the licensee's request, then the staff

¹ In this section, "licensees" refers to licensees of nuclear power plants under 10 CFR Parts 50 and 52; and the term "applicants," refers to applicants for licenses and permits for (or relating to) nuclear power plants under 10 CFR Parts 50 and 52, and applicants for standard design approvals and standard design certifications under 10 CFR Part 52.

may (in the absence of a licensee proposal complying with the underlying NRC regulatory requirement) require the licensee to use this RG as a prerequisite for NRC approval. This is not considered backfitting as defined in 10 CFR 50.109(a)(1) or a violation of any of the issue finality provisions in 10 CFR Part 52.

Conclusion

This RG is not being imposed upon current licensees and may be voluntarily used by existing licensees. In addition, this RG is issued in conformance with all applicable internal NRC policies and procedures governing backfitting. Accordingly, the NRC's staff issuance of this RG is not considered backfitting, as defined in 10 CFR 50.109(a)(1), nor is it deemed to be in conflict with any of the issue finality provisions in 10 CFR Part 52.

REFERENCES²

1. 10 CFR Part 55, "Operators' Licenses," U.S. Nuclear Regulatory Commission, Washington, DC.
2. 52 FR 9460, "Operator's Licenses and Conforming Amendments," Final Rule, *Federal Register*, Volume 52, Number 57, p. 9460, Washington, DC, March 25, 1987.
3. 66 FR 52667, "Operator License Eligibility and Use of Simulation Facilities in Operator Licensing," Final Rule, *Federal Register*, Volume 66, Number 201, p. 52667, Washington, DC, October 17, 2001.
4. Regulatory Guide 1.149, "Nuclear Power Plant Simulation Facilities for Use in Operator Training and License Examinations," Revision 3, U.S. Nuclear Regulatory Commission, Washington, DC, October 2001.
5. ANSI/ANS-3.5-1998, "Nuclear Power Plant Simulators for Use in Operator Training and Examination," American Nuclear Society, La Grange Park, IL, April 15, 1998.
6. ANSI/ANS-3.5-1993, "Nuclear Power Plant Simulators for Use in Operator Training and Examination," American Nuclear Society, La Grange Park, IL, March 29, 1993.
7. ANSI/ANS-3.5-1985, "Nuclear Power Plant Simulators for Use in Operator Training," American Nuclear Society, La Grange Park, IL, October 25, 1985.
8. ANSI/ANS-3.5-2009, "Nuclear Power Plant Simulators for Use in Operator Training and Examination," American Nuclear Society, La Grange Park, IL, September 4, 2009.³
9. Memo from Nancy L. Salgado, Chief, Operator Licensing and Human Performance Branch, Division of Inspection and Regional Support (DIRS), Office of Nuclear Reactor Regulation (NRR), to Frederick D. Brown, Director, DIRS, NRR, re: Summary of December 11, 2007, Meeting with Industry Focus Group on Operator Licensing Issues, January 3, 2008. (Agencywide Documents Access and Management System (ADAMS) Accession No. ML073511714).
10. Letter to the NRC from John C. Butler, Director, Operations Support, Nuclear Generation Division, NEI, to John McHale, Chief, Operator Licensing and Training Branch, DIRS, NRR, re: NEI 09-09, "Nuclear Power Plant-Referenced Simulator Scenario Based Testing Methodology," Revision 1, December 8, 2009. (ADAMS Accession Nos. ML093521654 (cover letter) and ML093521659 (associated attachment)).
11. NRC, "Nuclear Regulatory Commission International Policy Statement," *Federal Register*, Vol. 79, No. 132, July 10, 2014, pp. 39415-39418.

² All publicly available NRC documents are available electronically through the Electronic Reading Room on the NRC's public Web site at http://www.nrc.gov/reading_rm/doc_collections/cfr/. The documents can also be viewed on-line for free or printed for a fee in the NRC's Public Document Room (PDR) at 11555 Rockville Pike, Rockville, MD; the mailing address is USNRC PDR, Washington, DC 20555; telephone (301) 415-4737 or (800) 397-4209; fax (301) 415 3548; and e mail pdr.resource@nrc.gov.

³ Copies of American Nuclear Society (ANS) standards may be purchased from the ANS Web site (<http://www.new.ans.org/store/>); or by writing to: American Nuclear Society, 555 North Kensington Avenue, La Grange Park, Illinois 60526, U.S.A., Telephone 800-323-3044.

12. NRC, Management Directive (MD) 6.6, "Regulatory Guides," Washington, DC, May 2, 2016 (ADAMS Accession No. ML18073A170).
13. The National Technology Transfer and Advancement Act of 1995, Pub. L. 104-113.
14. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," U.S. Nuclear Regulatory Commission, Washington, DC.
15. 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," U.S. Nuclear Regulatory Commission, Washington, DC.