

**RESPONSES TO PUBLIC COMMENTS ON DG-1248,
“NUCLEAR POWER PLANT SIMULATION FACILITIES FOR USE IN OPERATOR
TRAINING, LICENSE EXAMINATIONS, AND APPLICANT EXPERIENCE REQUIREMENTS.”**

The U.S. Nuclear Regulatory Commission (NRC) published a notice about draft regulatory guide DG-1248, “Nuclear Power Plant Simulation Facilities for Use in Operator Training, License Examinations, and Applicant Experience Requirements,” in the *Federal Register* on May 27, 2010 (75 FR 29785), and the public comment period ended on August 27, 2010. Public comments on DG-1248 may be viewed on the NRC’s public Web site at <http://www.nrc.gov> under “NRC Rule Making Web Site,” under “News, Information and Contacts for Current Rulemaking.”

The agency received 62 comments on the draft regulatory guide. Three comments were from two individuals, 12 were from the Nuclear Energy Institute (NEI), 9 were from the Mid-Atlantic Nuclear Training Managers Group (MANTG), 22 were from the Western Region Nuclear Training Managers Group (WESTRAIN), 8 were from five facility licensees, and 8 were from the American Nuclear Society (ANS) Standards Committee Working Group (WG) ANS-3.5.

No State agency submitted comments. No public meetings to discuss the draft document took place, and none were requested. However, an industry workshop sponsored by NEI on plant-referenced simulator scenario-based testing (SBT) methodology included a discussion on the general status of the draft guideline.

The staff grouped the public comments received into five categories, described below: (1) retention of simulator performance testing records, (2) simulator reactor core performance testing, (3) post-event simulator testing (PEST), (4) regulatory guide implementation, and (5) miscellaneous. The staff merged redundant public comments as appropriate and considered comments of an editorial nature.

Retention of Simulator Performance Testing Records

The following public comments referenced the staff’s discussion under Section C.2.b of DG-1248.

Comment 1-1: NEI, MANTG, WESTRAIN, and others commented that the NRC should delete its regulatory position regarding malfunction record retention because it is not consistent with the records retention requirement in Title 10 of the *Code of Federal Regulations* (10 CFR) 55.46(d)(1), which states, “The results of performance tests must be retained for four years after the completion of each performance test or until superseded by updated test results.” The stakeholders contend that 10 CFR 55.46(d)(1) allows malfunction tests to be discarded after 4 years and contains no requirement to maintain performance test records for more than 4 years.

Additionally, MANTG asked if completed test results from previous certification submittals to the NRC under older versions of American National Standards Institute (ANSI)/ANS-3.5, “Nuclear Power Plant Simulators for Use in Operator Training and Examination,” suffice as proof of individual malfunction testing.

Response: In regard to the first issue about the time requirements for record retention, the staff agrees that 10 CFR 55.46(d)(1) allows simulation facility licensees to discard malfunction performance test results after 4 years. Although the NRC believes it may be prudent to retain performance test results until they are superseded by updated test results, 4 years is a sufficient amount of time to retain these records because of the testing methodology associated with SBT.

In regard to the second issue about proof of malfunction testing, the staff agrees that previous certification of completed simulator malfunction performance test results as meeting ANSI/ANS-3.5 fidelity requirements through submission of Form NRC-474, "Simulation Facility Certification," is sufficient as proof that individual malfunction testing was conducted at least once within the life of the simulator (as referenced in Section 2, Recommendation 4, of NEI-09-09, "Nuclear Power Plant-Referenced Simulator Scenario Based Testing Methodology," Revision 1, dated December 8, 2009). 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.

Therefore, the staff has revised Section C.2.b to read as follows:

- b. In regard to Section 3.1.4, "Malfunctions," 10 CFR 55.46(d)(1) allows simulation facility licensees to discard malfunction performance tests/test results after four 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 tests evolutions.

Comment 1-2: The ANS WG ANS-3.5 asked: "If the [malfunction] test results are not superseded within four years, can the [malfunction] performance test record be discarded after four years?" The WG commented that the requirement in NEI-09-09 for retaining malfunction records (i.e., for the life of the simulator) appears to be more restrictive than that in 10 CFR 55.46(d)(1) (4 years or until superseded by updated test results) and asked the NRC to clarify the requirements for retaining records of the malfunction tests.

Response: See the NRC's response to Comment 1-1.

Comment 1-3: MANTG commented that the staff's position discussed in Section C.2.b appears to require that facility licensees retain the results of simulator malfunction testing for the entire life of the simulation facility. MANTG asked, "How can a regulatory guide impose more requirements/restrictions on a facility licensee than the regulation on which it is based?"

Response: See the NRC's response to Comment 1-1.

Comment 1-4: MANTG commented that approximately 50 percent of facility licensees are currently committed to ANSI/ANS-3.5-1998 testing (i.e., malfunctions are tested within scenarios instead of discreet individual test). MANTG asked, “Does existing SBT documentation suffice for proof of malfunction testing under this section of the Draft Guide?”

Response: In the staff’s view, if the existing SBT documentation was derived using the methodology in NEI-09-09, Revision 1, proof of malfunction performance testing should be evident.

Comment 1-5: MANTG commented that the majority of its membership believes that Section C.2.b is extraneous and the guidance within it potentially burdensome.

Response: See the NRC’s response to Comment 1-1.

Simulator Reactor Core Performance Testing

The following public comments referenced the staff’s discussion under Section C.2.g of DG-1248.

Comment 2-1: NEI, WESTRAIN, and one licensee commented that the NRC’s first sentence in Section C.2.g should (1) add the phrase “within the scope of simulation” to be consistent with the language used in the standard, (2) delete the phrase “with respect to real time” so that “fast time” can be used when conducting some core performance tests, and (3) clarify the phrase “and the conduct of core evolutions involved,” which appears to be an incomplete sentence. The stakeholders contend that some simulator (core) performance tests (such as a peak xenon test) would require an 8-hour run time if “real time” was used. On the other hand, the use of “fast time” would require less time, increasing simulator use by the operations training programs.

Additionally, stakeholders commented that license classes may run through more than one fuel operating cycle, so reactivity manipulations may be conducted on core loads that precede and follow a refueling outage. Therefore, reactivity manipulations may not be performed in the same fuel cycle. Thus, WESTRAIN proposed that the NRC consider defining the phrase “most recent core load” as “the core load(s) that existed during the time of the NRC applicant’s initial training program.” However, NEI recommended adding the following clarification: “If the plant-referenced simulator is used to meet NRC experience requirements, as described in 10 CFR 55.31(a)(5), then the most recent core load (i.e., the core load(s) that existed during the time of the NRC applicant’s initial training program since reactivity manipulations may be performed in more than one fuel cycle) in the nuclear power reference plant for which a license is being sought must be utilized.”

Response: In regard to item (1), the scope of simulation and fidelity required by ANSI/ANS-3.5-2009 for use in operator training and examination may not necessarily be the same as that required by the regulation to allow conduct of required evolutions (e.g., performing control manipulations that affect reactivity to establish eligibility for an operator’s license as described in 10 CFR 55.31 (a) (5)). The standard’s scope establishes functional requirements for full-scope nuclear power plant simulators for use in operator training and examination. However, it does not establish functional requirements for nuclear power plant-referenced simulators for use in meeting NRC’s applicant experience requirements.

In regard to item (2), the standard defines the term “real time” as “simulation of dynamic performance in the same time base relationships, sequences, durations, rates, and accelerations as the dynamic performance of the reference unit.” The use of “fast time” is a unique feature required by the standard. However, it should not be used during the conduct of simulator core performance testing as described in Section 4.4.3.3, “Simulator Reactor Core Performance Testing,” of the standard.

In regard to item (3), the phrase “and the conduct of core evolutions involved” means that reactor evolutions performed in accordance with reference-unit procedures should be carried out in real time without altering the simulator’s nuclear and thermal-hydraulic models. Therefore, the staff has revised the first sentence in Section C.2.g of the regulatory guide to read: “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.”

Finally, in regard to the last issue, the NRC previously explained in its Statements of Consideration for the final simulator rule (66 FR 52667; October 17, 2001) the meaning of the term “most recent core load.” Specifically, the phrase “most recent” means the current core or, if the plant is in a refueling outage, the core just previous to the outage. An applicant, as a trainee, may complete some or all of his/her control manipulations required under 10 CFR 55.31(a)(5) on a plant-referenced simulator that meets the requirements of 10 CFR 55.46(c). The staff recognizes that this may result in the use of two different reference-plant core loads, depending on the timing for the conduct of control manipulations.

Comment 2-2: MANTG commented that many facility licensees have standardized on a core cycle length such that core parameters that would be noticeable by a licensed operator do not change appreciably from cycle to cycle. Consequently, some facility licensees conduct a detailed comparison of the characteristics of the two cores (in conjunction with the reactor engineering department) and, if the characteristics meet the established facility acceptance criteria, do not conduct detailed core performance testing for the new cycle core (i.e., the detailed core performance testing conducted for the previous cycle is considered applicable to the new cycle). MANTG asked if this practice is sufficient for demonstrating core load fidelity.

Response: The technical approach described in the comment may not be sufficient for demonstrating compliance with 10 CFR 55.46(c)(2)(i), which requires that the plant-referenced simulator use models relating to nuclear and thermal-hydraulic characteristics that replicate the most recent core load in the nuclear power reference plant for which a license is being sought. The core performance testing must be conducted in a manner sufficient to ensure that simulator fidelity has been demonstrated. However, the technical approach presented, albeit unconventional, cannot be excluded as a possible solution if the plant-referenced simulator’s nuclear and thermal-hydraulics models (1) operate within the tolerances specified in the acceptance criteria for the reference-unit procedure(s) (e.g., cycle-specific low-power physics test) and (2) demonstrate the same response as the reference-plant response during the conduct of core evolutions.

Comment 2-3: WESTRAIN, as well as one individual from a pressurized-water reactor simulation facility licensee and one fleet facility licensee, commented that reactor core testing in the plant is very limited (depending on whether initial criticality is attained as expected) and that the reactor engineering staff uses a reactivity meter to measure reactivity changes. The commenters stated that a reactivity meter does not exist in the simulator modeling, which means that the meter is not within the scope of simulation (see Section 3.4.3.3 of

ANSI/ANS-3.5-2009) and therefore prevents the ability to use the reference plant's procedures for core testing. Sections 3.4.3.3 and 4.4.3.3 of the standard seem to contradict each other when considering the actual meaning of the phrase "within the scope of simulation."

The commenters recommended adding the following statement at the end of the staff's clarification discussion on Section 4.4.3.3: "If the scope of simulation prevents performance of simulator reactor core performance testing using reference plant procedures as required by section 4.4.3.3 of ANSI/ANS-3.5-2009, then the utility should document an exception to the standard and establish simulator reactor core testing methodologies (including acceptance criteria) that demonstrates the simulator response replicates the response of the reference unit."

Response: The staff disagrees with the view that the absence of an actual reactivity meter in the simulator prevents the ability to use the reference plant's procedures for core testing. The use of an actual reactivity meter or a suitable substitute that is functionally equivalent (e.g., reactivity meter simulator/simulation modeling) is a technical issue that falls within the scope of simulation prescribed by the standard in Section 4.2.1.4, "Assessment of Deviations."

Comment 2-4: One individual from a pressurized-water reactor simulation facility licensee commented that at many stations, including his, the reactor engineering staff uses a reactivity meter to measure reactivity changes. The commenter stated because this meter is not a fixed component of the reference-unit control room and has no effect on operator training; the original scope of simulation did not include it, thereby preventing the ability to use reference-plant procedures for core testing and comparison. The commenter stated the effort needed to include the meter in the scope of simulation is not cost-effective since it would result in no net improvement to the operator training program. In addition, the simulator reactor core testing currently conducted specifically targets parameters visible during normal operator training conditions at selected times in core life, whereas the additional low-power physics testing mandated by reference-plant procedures occur at a burnup not normally used by the operator training programs and provides little confidence that the reactivity parameters seen at other times in core life are correct.

At the commenter's station, the simulator core performance testing is seen as a barrier to implementation of ANSI/ANS-3.5-2009 because of the (1) additional time required to establish and maintain a zero burnup initial condition set, (2) additional time to conduct reactor core testing in accordance with reference-unit procedures, and (3) the additional time and cost associated with implementation of a reactivity meter.

Finally, the commenter recommended adding the same statement given in Comment 2-3 at the end of the staff's discussion on simulator reactor core performance testing.

Response: See the NRC's response to Comment 2-3.

Post-Event Simulator Testing

The following public comments referenced the staff's discussion under Section C.2.h of DG-1248.

Comment 3-1: NEI and WESTRAIN commented that the NRC should (1) delete the phrase "as a minimum" to place focus on demonstrating simulator performance for items 1 through 4 of the draft guide, (2) delete the phrases "reference plant events" and "such as" to provide flexibility,

(3) add “relevant unplanned or unexpected (off-normal) events deemed appropriate by the facility licensee” to provide flexibility, and (4) delete item 5 and clarify that deviations are not required to be resolved within 60 days by replacing item 5 with the following sentence: “The comparison should be performed and any significant deviations identified within 60 days of the event.” Post-event testing should focus on unplanned, unexpected, and off-normal events.

Response: In light of feedback received at a recent industry-sponsored workshop on NEI’s SBT methodology, as well as the nature of the public comments on this topical area, the NRC acknowledges the concerns about the staff’s proposed expectations in its draft guide. Therefore, simulation facility licensees are encouraged, but not required, to conduct post-event simulator testing (PEST) on significant reference-plant events on the plant-referenced simulator within 120 calendar days of the event. Because simulation facility licensees are responsible for determining what constitutes a significant reference-plant event and whether the event is demonstrated on the plant-referenced simulator, the final guide does not include the specific examples listed in the draft guide. In the staff’s view, 120 days is a reasonable timeframe to complete PEST. The NRC agrees with industry that PEST should focus on unplanned, unexpected, and off-normal reference-plant events.

The staff has revised the position clarification in the final guide to read as follows:

- h. 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.

Comment 3-2: The ANS WG ANS-3.5 suggested that items 1, 2, and 4 of the draft guide only address unplanned events and commented that the paragraph clarifying PEST is too broad.

Response: See the NRC’s response to Comment 3-1.

Comment 3-3: MANTG commented that the term “significant” in item 3 of the draft guide with respect to unplanned or unexpected reactivity changes is vague and should be eliminated, as the facility should decide what is “significant” as specified in item 5 of the draft guide.

Response: See the NRC’s response to Comment 3-1.

Comment 3-4: Regarding item 2 of the draft guide, MANTG commented that it assumes that planned manual reactor trips at the end of an operating cycle during a plant shutdown into a refueling outage would not require PEST and asked for clarification.

Response: See the NRC’s response to Comment 3-1.

Comment 3-5: Regarding item 1 of the draft guide, MANTG commented that it assumes that this regulatory position includes only unplanned engineered safety feature actuations and not those that may be initiated for plant surveillance testing and asked for clarification.

Response: See the NRC’s response to Comment 3-1.

Comment 3-6: MANTG commented that most plant trips or other significant events require a root cause evaluation, which can sometimes take up to 60 days to complete before the station staff receives the final results. Therefore, MANTG suggested that a time limit for PEST of 90 days would be more reasonable than a 60-day limit.

Response: See the NRC's response to Comment 3-1.

Comment 3-7: The ANS WG ANS-3.5 asked the staff to remove the phrase "within 60 calendar days following the event" from the guide since ANSI/ANS-3.5-2009, Section 4.4.3.4, provides adequate guidance.

Response: See the NRC's response to Comment 3-1.

Comment 3-8: One facility licensee asked the NRC to change the time to complete PEST from 60 calendar days to 120 calendar days. Another licensee suggested a limit of 90 days. The commenter stated that depending on the complexity of the event, data collection could be extensive. Additionally, once data are collected and analyzed, the scope of simulation will have to be evaluated to determine whether initiating conditions can be replicated or whether simulator modeling changes are required. It may not be possible to complete an accurate PEST within 60 calendar days in all cases.

Response: See the NRC's response to Comment 3-1.

Comment 3-9: One individual asked the NRC to consider including the following provision in the final guide:

The licensee should have a process in place to identify reference unit events that have the potential to improve the response of the plant-referenced simulator. Events in the scope of simulation that are evaluated to be similar to those previously tested by post-event simulator testing or other methods of simulator testing need not be re-tested. The process should include evaluation of plant events within a reasonable time considering training needs, data availability, and other plant administrative processes that could provide conclusive results.

The commenter stated that "direct enumeration of plant events is then included within the process when the event is unfamiliar, untested on the simulator, and within the scope of simulation, but without creating a fixed re-testing regime similar to that encountered in the previous and mandated individual malfunction testing as regulations required performance testing." Finally, the commenter concluded that "those that adopt the regulatory guide with this provision would then be subject to having a process in place for PEST as opposed to the recommendation in the Standard wherein there is no requirement for an alternative and, thereby, can be ignored."

Response: See the NRC's response to Comment 3-1. The staff considered the commenter's views and suggestions and found that, while they contain some additional detail, they are essentially consistent with the existing recommended actions called for in Section 4.4.3.4 of ANSI/ANS-3.5-2009 and the clarification included in the final guide in response to Comment 3-1.

Regulatory Guide Implementation

The following public comments referenced the staff's discussion under Section D of DG-1248.

Comment 4-1: WESTRAIN commented that it considers the additional documentation associated with NEI-09-09 to be excessive and an unnecessary burden; marking up and retaining all procedures used during the SBT is of no advantage to the facility except to demonstrate compliance during the NRC inspection process. The lead instructor's affirmation of the acceptance criteria is sufficient.

Response: The NRC acknowledges the commenter's concern and will continue to work through NEI's Licensed Operator Focus Group to resolve industry concerns with NEI-09-09 as experience is gained during its implementation. However, in the interim and given that the concern is related to a NEI document, WESTRAIN should address specific concerns to NEI.

Comment 4-2: NEI commented that the process to transition to the new standard may not be "seamless and transparent" and of "minimal burden" for some licensees and, therefore, the staff should remove the fourth sentence in the third paragraph of Section D that states this. Producing malfunction test documentation could be a significant burden and costly if the licensee will be required to conduct old malfunction tests. This is particularly true for those facilities that eliminated records that are more than 4 years old, as allowed by 10 CFR 55.46, "Simulation Facilities."

Response: The NRC acknowledges the forward-looking nature of its statement in the draft guide and has removed it. The NRC has determined that movement to a single consensus standard is in the best interest of simulation facility licensees, as well as the general public. As a result of this change, NRC review and inspection of plant-referenced simulators for compliance with the requirements of 10 CFR 55.46 should be more uniform.

With regard to malfunction test documentation, see the NRC's response to Comment 1-1.

Comment 4-3: In terms of the simulator portion of Inspection Procedure 71111.11, "Licensed Operator Requalification Program," dated January 5, 2006, MANTG asked the NRC to explain how it will handle a facility licensee that does not commit voluntarily to implementing ANSI/ANS-3.5-2009.

Response: The NRC does not require facility licensees to commit to implementing ANSI/ANS-3.5-2009. The NRC will continue, without any bias as to which version of ANSI/ANS-3.5 a licensee has committed to implement, to assess (1) the adequacy of the facility licensee's simulation facility for use in initial and requalification examinations for operating licensing and for satisfying the experience requirements as prescribed by 10 CFR 55.46, and (2) the effectiveness of the facility licensee's process for continued assurance of simulator fidelity with regard to identifying, reporting, correcting, and resolving discrepancies via a corrective action program.

Comment 4-4: MANTG and one individual asked the NRC to describe its expectation for facility licensees to communicate their commitment to implementing ANSI/ANS-3.5-2009 (e.g., formal docketed correspondence).

Response: Simulation facility licensees should follow their normal licensing communication protocols with the NRC. In other words, all facility licensees should review their requirements

and commitments and update their documentation (e.g., final/updated safety analysis reports, technical specifications, and training program procedures) accordingly. Simulation facility licensees are encouraged, but not required, to communicate via the docket their new commitment to implement ANSI/ANS-3.5-2009 in the same manner as before (e.g., a brief letter informing the NRC of the new commitment).

Comment 4-5: MANTG commented that the NRC staff has publicly communicated to the industry that it would implement a 6-month transition period between the effective date of Revision 4 of Regulatory Guide 1.149 and the date facility licensees are expected to have revised their simulator testing programs accordingly. However, the draft regulatory guide does not discuss any such transition period. MANTG suggests including it in the final guide or in some additional regulatory correspondence.

Response: The staff had discussed the 6-month timeframe as a guideline and not as a requirement. Therefore, since implementation of ANSI/ANS-3.5-2009 is not a regulatory requirement, the final guide will not address the timing to implement the change. Furthermore, the staff understands that licensees must consider factors such as the timing of simulator performance tests and operator training schedules in order to implement the transition.

Miscellaneous

The following public comments referenced the staff's discussion under all other sections of DG-1248.

Comment 5-1: The ANS WG ANS-3.5 commented that new-build nuclear power plants with distributed control systems have no design baseline data (source data) available to manufacture a full-scope simulator for delivery to support initial licensed operator training before detailed data become available. The WG asked the staff to explain its rationale for concluding that the new standard can be applied to simulators for new-build nuclear power plants.

Response: It is the staff's view that Section 5, "Simulator Configuration Management," of ANSI/ANS-3.5-2009 provides adequate guidance for new and operating full-scope nuclear power plant simulation facilities. This section of the standard addresses design baseline concerns typically associated with new full-scope nuclear power plant simulators. The view that no simulator design baseline data exist for a new nuclear power plant with distributed control systems is incorrect; a new nuclear power plant would be expected to have extensive reference-unit engineering and design data before actual construction.

Comment 5-2: WESTRAIN commented that the NRC should state that it recognizes exceptions taken on initial certification of simulation facilities and recommended adding the following sentence to the discussion on plant-referenced simulator performance testing: "The Commission recognizes exceptions taken on initial certification of simulation facilities; these exceptions may be carried forward as applicable to the ANS-3.5-2009 standard."

Response: Before May 26, 1991, simulation facility licensees submitted an initial certification on Form NRC-474 and a report to the Commission to consider for use of the licensees' plant-referenced simulators. Facility licensees had the option to indicate on the form if they took any exceptions to the certification and, if so, to describe them on additional pages as necessary. The NRC considered each NRC-474 certification and attached certification report submittal as information pertinent to its determination of whether a simulation facility and its proposed use

were suitable for the conduct of operating tests for the facility licensee's reference plant. Simulation facility licensees are expected to meet all of the functional requirements in the standard to which the licensee commits, except as provided by the standard itself under Section 4.2.1.4. Licensees should review whether exceptions taken on their initial simulation facility certifications are still valid and warranted in accordance with their simulator configuration and management protocols.

Comment 5-3: WESTRAIN commented that the NRC should reference SBT acceptance criteria in Section 4.4.3.2, "Simulator Scenario-Based Testing," or clearly state any additional acceptance criteria in the guide. WESTRAIN recommended adding the following sentence to the discussion on plant-referenced simulator performance testing:

Facility licensees that propose to use a plant-referenced simulator to meet the experience requirements in 10 CFR 55.31(a)(5) shall validate the performance of the simulator via simulator reactor core performance testing and scenario-based testing utilizing acceptance criteria in sections 4.4.3.2 and 4.4.3.3 of the standard, respectively.

Response: The staff finds that WESTRAIN's recommendation is not necessary since Regulatory Guide 1.149, Revision 4, describes methods acceptable to the staff for complying with portions of the Commission's regulations associated with approval or acceptance of a nuclear power plant simulation facility for use in meeting applicant experience requirements.

Comment 5-4: WESTRAIN commented that the staff's discussion of 10 CFR 55.46(c)(2)(i) and (ii) implies that the only testing acceptance criteria for experience requirements are items (i) and (ii).

Response: Items (i) and (ii) in 10 CFR 55.46(c)(2) are regulatory requirements uniquely associated with facility licensees that proposed to use a plant-referenced simulator to meet applicant experience requirements under 10 CFR 55.31(a)(5). These items are not simulator testing acceptance criteria as discussed in ANSI/ANS-3.5-2009. See the NRC's response to Comment 5-3.

Comment 5-5: WESTRAIN asked the staff to delete the sentence: "NEI-09-09, Revision 0, also supports Section 4.4.3.2, 'Simulator Scenario-Based Testing,' of ANSI/ANS-3.5-1998" from the staff's general discussion on NEI-09-09 because it implies a backfit.

Response: The staff has eliminated the reference to NEI-09-09, Revision 0, and ANSI/ANS-3.5-1998. The view that a backfit is implied is incorrect because (1) the reference to ANSI/ANS-3.5-1998 is not a new staff position and does not differ from a previous staff position and (2) the statement does not modify or add to the Commission's simulation facility regulation.

Comment 5-6: WESTRAIN commented that the NRC should delete the third sentence in its discussion on NRC acceptance and endorsement of NEI-09-09, Revision 1, because compliance with NEI 09-09 does not, by itself, satisfy the requirements in 10 CFR 55.46. The simulator's testing program as described in Sections 3.4 [Simulator Testing] and 4.4 [Simulator Testing] of the ANSI/ANS-3.5-2009 is designed to meet the requirements in 10 CFR 55.46.

Response: The NRC agrees that compliance with NEI-09-09 does not, by itself, satisfy the requirements prescribed in 10 CFR 55.46 and, therefore, has deleted the contested sentence in

the final guide. However, the NRC does not agree with the view that the simulator's testing program as described in the standard is designed to meet the requirements in the regulation.

Comment 5-7: The ANS WG ANS-3.5 commented that the NRC should delete the parenthetical phrase "(and ANSI/ANS-3.5-1998, which NEI-09-09, Revision 0 supported)" in its discussion on NRC acceptance and endorsement of NEI-09-09, Revision 1, because the agency should only be concerned with items and issues that relate to with ANSI/ANS-3.5-2009.

Response: See the NRC's response to Comment 5-5.

Comment 5-8: WESTRAIN commented that the NRC should delete the position clarification regarding Section 4.4.3.1, "Simulator Operability Testing," footnote 6, because it does not clarify or add any guidance than that already noted in ANSI/ANS-3.5-2009 and could only lead to confusion. Additionally, the ANS WG ANS-3.5 commented that this footnote states a fact that is already confirmed in the standard.

Response: The staff agrees that proposed NRC Section C.2.e (regarding footnote 6 in Section 4.4.3.1 of the standard) is not needed and therefore has deleted it.

Comment 5-9: WESTRAIN and NEI commented that the NRC should substitute the phrase "testing documentation" with the phrase "testing methodology" in its discussion on acceptability of the licensee's simulation facility since the agency does not intend licensees to revise previous simulator documentation to transition to ANSI/ANS-3.5-2009.

Response: The terms "testing methodology" and "testing documentation" are not synonymous. The former is associated with the methods or organizing principles underlying the software and testing, whereas the latter is associated with the process of providing written test details and results.

Comment 5-10: WESTRAIN asked whether revising the regulatory guide is necessary for simulation facility licensees to move voluntarily to a single consensus standard and carry out the requirements of that standard.

Response: Revision of the regulatory guide is not necessary for simulation facility licensees to move voluntarily to a single consensus standard. Simulation facility licensees are not prohibited from moving voluntarily to ANSI/ANS-3.5-2009.

Comment 5-11: WESTRAIN suggested that the final guide should include glossary definitions for "replicate," "significant deviation," "compare favorably," and "procedural exception." However, NEI suggested that the NRC eliminate the guide's glossary as the terms are adequately defined in the noted references for each definition.

Response: The staff has eliminated the glossary from the final guide.

Comment 5-12: The ANS WG ANS-3.5 asked the NRC to reconsider using the term "reference unit" instead of the term "reference plant" for consistency with ANSI/ANS-3.5-2009.

Response: The staff acknowledges that ANSI/ANS-3.5-2009 uses the term "reference unit." However, the staff notes that 10 CFR 55.4, "Definitions," defines and uses the term "reference plant." Therefore, "reference plant" is the correct terminology for use in Regulatory Guide 1.149.

The staff also notes that the terms “reference plant” and “reference unit” are synonymous based on their definitions in 10 CFR 55.4 and ANSI/ANS-3.5-2009, respectively.

Comment 5-13: WESTRAIN asked whether Appendix B, item 2, in the draft guide (e.g., “Simulator initial conditions (IC) agreed with reference plant with respect to reactor status, plant configuration, and system operation”) only applies to scenarios associated with reactivity manipulations.

Response: In the staff’s view, item 2 is applicable to any SBT scenario used to satisfy the performance testing requirements under Section 4.4.3.2 of ANSI/ANS-3.5-2009. Therefore, no change to the regulatory guide is warranted.

Comment 5-14: WESTRAIN commented that the staff should delete the reference to ANSI/ANS-3.5-2009 in Appendix B, item 10, of the draft guide because it is redundant.

Response: See the NRC’s response to Comment 5-16.

Comment 5-15: NEI and WESTRAIN commented that the staff should delete the phrase “and entered” in Appendix B, item 11, of the draft guide because it is redundant to the term “documented” in the configuration management process.

Response: See the NRC’s response to Comments 4-1 and 5-16.

Comment 5-16: WESTRAIN commented that the staff should not include Appendix B in the final regulatory guide and recommended removing the references.

Response: The staff acknowledges that Revision 4 of Regulatory Guide 1.149 endorses NEI-09-09 without exceptions as an acceptable method for the conduct and documentation of SBT and therefore has eliminated Appendix B from the final guide. However, the final guide retains the reference list of background and basis information supporting the NRC’s endorsement.

Comment 5-17: NEI recommended that the staff remove Appendix B from the final regulatory guide as well as any references to it in the body of the document. Additionally, the ANS WG ANS-3.5 commented that the NRC should remove Appendix B because the checklist is repetitive to the NRC’s endorsement of NEI-09-09.

Response: See the NRC’s response to Comment 5-16.

Comment 5-18: One facility licensee commented that ANSI/ANS-3.5-2009 does not provide guidance on the frequency of performing the normal evolutions for plant startups, shutdowns, and load changes identified in Section 3.1.3.2, “Normal Evolutions.” The commenter recommended that the staff include guidance on the frequency of these evolutions, similar to the guidance in the draft guide’s Section C.2.b regarding Section 3.1.4 malfunctions.

Response: The NRC acknowledges that the new standard (as well as previous versions) does not address a frequency for performing the normal evolutions identified in Section 3.1.3.2. The NRC expects that a facility licensee will routinely demonstrate that simulator response, during the performance of the Section 3.1.3.2 normal evolutions, correctly represents the response of the reference plant consistent with their use, per the facility licensee’s systems approach to initial and requalification operator training programs.

In the staff's view, the recommendation to include guidance on the frequency of ANSI/ANS-3.5 Section 3.1.3.2 "Normal Evolutions," is not necessary since the evolutions are routinely demonstrated during initial and licensed operator requalification training.

Comment 5-19: One facility licensee recommended that the guide clarify validation testing expectations for limited-scope simulator changes such as computer platforms, operating systems and run-time utilities, interface systems, and instructor stations.

Response: Upon further staff review of Section 4.4.2 "Simulator Validation Testing," of ANSI/ANS-3.5-2009, regarding the expectations for simulator validation testing, the NRC sees no need for additional clarification on this technical area in the final regulatory guide. The commenter is encouraged to discuss the concern with the ANS WG ANS-3.5 if he/she needs further clarification on limited-scope simulator changes.

Comment 5-20: One individual commented that the staff should consider including a statement in the background discussion that Congress authorized and directed the NRC to promulgate regulations, or other appropriate Commission regulatory guidance, for the training and qualifications of civilian nuclear power plant operators, supervisors, technicians, and other appropriate operating personnel.

Response: The staff acknowledges the comment, but no action is needed since the references in the regulatory guide to 10 CFR Part 55, "Operators' Licenses," effectively communicate the commenter's suggestion.