Charter: Declaration of Plant-Referenced Simulators and Qualification of Commission-Approved Simulation Facilities to Support the Cold Licensing Process

Tasks & Recommendations
Task 2

Charter: Declaration of Plant-Referenced Simulators and Qualification of Commission-Approved Simulation Facilities to Support the Cold Licensing Process

Objective

The "Charter for Declaration of Plant-Referenced Simulators and Qualification of Commission-Approved Simulation Facilities to Support the Cold Operator Licensing Process," dated April 14, 2017 can be found in the NRC's Agencywide Document Access and Management System (ADAMS) at accession number ML17079A362. The charter stated that the objective of the "Task Team" (the team) is to formulate and develop cold operator licensing process recommendations for (1) the steps and activities necessary for a licensee to declare a simulator as a Plant-Referenced Simulator (PRS) and (2) the application and evaluation process used to qualify a simulation facility as a Commission-approved simulator (CAS).

The charter was divided into two parts, Tasks 1 and 2. Task 1 of the charter was to recommend the steps and activities necessary for a licensee to declare a simulator as a PRS and was completed as described below. Task 2 pertains to the longer term need of recommending generic acceptance criteria and guidance for performing an evaluation to qualify a simulator as a CAS for use in the administration of the NRC examination operating test. In addressing these tasks, the team only provides recommendations. Any regulatory guidance that is developed based on these recommendations (e.g., acceptance criteria) will go through the normal review and approval process. A team was established consisting of staff from the Office of New Reactors, Office of Nuclear Reactor Regulation, and Region II Operator Licensing to provide recommendations to NRC management on the actions necessary to accomplish these tasks. The objective of this document is to identify the team's recommendations.

Charter Team Activities

The recommendations for Task 1 are documented in "Charter: Declaration of Plant-Referenced Simulators and Qualification of Commission-Approved Simulation Facilities to Support the Cold Licensing Process Tasks & Recommendations – Task 1" dated December 12, 2017, available at ADAMS Accession Number ML17268A229.

For Task 2 of this charter, the team reviewed applicable regulations, standards, and guidance to develop recommendations. NRC staff conducted an observation of operator training at NuScale Power, LLC, June 11-15, 2018, in order to gain insights as to what modifications may need to be made to the operator licensing exam process in order to administer exams at a NuScale plant. As part of this observation, NuScale staff shared with NRC staff NuScale's perspective on the possible options for a COL applicant to obtain a simulator that can be used for administering operating tests. The team developed the generic recommendations documented herein with future new reactor licensees in mind, including any potential NuScale facility licensees. The team did not conduct any other external stakeholder engagement because the team determined there are no other external stakeholders that need to be engaged at this time given (1) there are no NuScale facility license applications before the staff for review at this time and (2) AP1000 licensees other than Southern Nuclear Operating Company, Inc. (SNC) have not informed the staff of any plans to commence construction at this time. The team evaluated the recommendations for possible unintended consequences to the existing operating reactor licensing program and did not identify any areas of concern.

Tasks & Recommendations

Charter Task 2

Task 2.a

2. Recommend generic acceptance criteria and guidance for performing an evaluation to qualify a simulator as a CAS for use in the administration of the NRC examination operating test.

a. Leverage the lessons learned in the previously-approved CAS facility safety evaluations for Vogtle and V.C. Summer.

Overview

The team's recommended generic acceptance criteria and guidance for evaluating whether the acceptance criteria have been met are included in this report in the section below titled, "Generic CAS Acceptance Criteria and Evaluation Guidance." The team developed additional recommendations related to approving simulation facilities for licensees of new reactor designs based on the lessons learned from the staff's review of the AP1000 simulation facilities for Vogtle Electric Generating Plant Units 3&4 (VEGP 3 & 4) and Virgil C. Summer Nuclear Station Units 2 & 3 (VC Summer 2 & 3). These are discussed in more detail below in the section titled, "Lessons Learned and Additional Recommendations." The development of specific guidance based on these recommendations will occur separately and in accordance with the appropriate procedures.

Background

As discussed in Section 2.0, "Regulatory Evaluation," of the staff's Safety Evaluation (SE) for the AP1000 simulation facility at VEGP 3 & 4 (ML16068A047) and the SE for the AP1000 simulation facility at VC Summer 2 & 3 (ML16146A762), the licensees requested Commission approval of their AP1000 simulation facilities for use in the administration of operating tests in accordance with 10 CFR 55.46(b) because the simulation facilities did not yet meet the NRC's requirements for plant-referenced simulators. The definition of a plant-referenced simulator as stated in 10 CFR 55.4 is "a simulator modeling the systems of the reference plant with which the operator interfaces in the control room, including operating consoles, and which permits use of the reference plant procedures." Some design activities required by the AP1000 design certification to establish the actual control room operating consoles for the AP1000 main control room were in progress but had not yet been completed.

Inspection Procedure IP 41502, "Nuclear Power Plant Simulation Facilities," (ML12233A564) identifies the integrated system validation (ISV) test as the key design activity conducted to establish the design of the operating consoles. Specifically, Section 02.02.b.3 of IP 41502 directs NRC staff to:

> Review simulator physical fidelity (i.e., the degree of similarity between the simulator and the reference plant control room, such as physical location of panels, equipment, instruments, controls, labels, and related form and function)…For new reactors, the physical fidelity is confirmed by reviewing

the Inspection, Test, Analysis and Acceptance Criteria (ITAAC) as discussed in 02.02.b.6 below and by performing Attachment 1, "Checklist for Evaluating Plant-referenced Simulator Operating under 10 CFR 55.46(c) and (d)," of this inspection procedure.

Additionally, Section 02.02.b.6.(a) of IP 41502 states,

> If this is the initial simulator inspection for the facility, verify that the ITAAC has been completed through the Integrated System Validation (ISV), if not contact the NRO Program Office (some portions may be able to be performed in parallel as determined by the program office.)

Thus, according to IP 41502, the ITAAC for the ISV need to be completed (i.e. the ITAAC need to be closed or verified) in order to verify simulator physical fidelity has been satisfactorily addressed. The ISV is an evaluation of the effectiveness of the human factors engineering (HFE) design of the control room human-system interfaces, which are contained within the control room operating consoles, and it is defined in NUREG-0711, "Human Factors Engineering Program Review Model," Revision 3 (ML12324A013), as "an evaluation, using performance-based tests, to determine whether an integrated system's design (i.e., hardware, software, and personnel elements) meets performance requirements and supports the plant's safe operation. HEDs [human engineering discrepancies] are identified if performance criteria are not met."

The licensees initially planned on declaring the simulators at their sites to be plant-referenced simulators after completion of the ISV, which was initially scheduled to start in October 2014 and end in late 2014. Initial operator licensing exams were scheduled to commence for VC Summer Unit 2 in May 2015. The public meeting summary dated June 11, 2014 (ML14161A453), explains the expected timeframe of events and states,

> Following ISV performance, significant issue resolution, and ANSI 3.5 testing, licensees will determine if their site-specific simulators are an AP-1000 PRS and inform the NRC. NRC acceptance of the PRS for use during licensing examinations and for control manipulations will be determined by conducting an inspection of the PRS using IP 41502, "Nuclear Power Plant Simulation Facilities." The PRS inspection is scheduled for the February 2015 timeframe….
>
> Preliminary ISV results will be compiled prior to the PRS inspection. These results will focus on the issues discovered during the ISV and will be available for NRC review by February 2015. The final ISV results report is scheduled for completion in July 2015….

At a closed public meeting on October 1, 2014 (the Meeting Notice is ML14262A166), the licensees and the staff discussed proprietary details concerning the schedule of ISV testing, PRS inspections, and NRC exams.[1] **[[ ]]**.

[[ ]]. For example, as discussed in the SE for VEGP 3 & 4, the number of alarms present in the control room during abnormal plant conditions resulted in a higher level of workload than was desired for the AP1000. The AP1000 Alarm Presentation System (APS) is a digital system that can receive thousands of inputs from plant equipment. If alarms are not appropriately

[1] As discussed on the NRC public website, there was no meeting summary for the public meeting on 10/1/14 because it was a closed meeting. The licensees prepared a proprietary presentation for the staff.

prioritized, filtered, or suppressed, then APS may not provide the key information the operators need to safely operate the plant in certain circumstances.

[[ ]].

Because completion of the ISV was considered a prerequisite for establishing the PRS at each site (as described in the public meeting summary dated June 11, 2014), the establishment of a PRS at each site **[[ ]]**. Therefore the facility licensees requested Commission approval of the AP1000 simulation facilities at the sites for use in operating tests.

The VC Summer 2 & 3 CAS request was submitted by letter dated January 16, 2015 (ML15016A339). By letter dated July 2, 2015 (ML15182A097), the staff informed SCE&G that the agency was suspending its review of its request based on the staff's determination that certain items, which were delineated in the enclosure to the July 2, 2015 letter, needed to be addressed through corrective action, or required additional explanation, before the staff could complete its detailed safety review. A second request was submitted by letter dated April 21, 2016 (ML16112A256), and the licensee supplemented the response twice to provide additional information to the staff (ML16146A717 and ML16194A247). The staff approved the request by letter dated July 29, 2016 (ML16146A772).

The VEGP 3 & 4 CAS request was submitted on September 18, 2015 (ML15265A107), and the licensee supplemented its response three times to provide additional information to the staff (ML15327A005, ML16049A359, and ML16083A463). The staff approved the request by letter dated March 25, 2016 (ML16068A043).

In addition to approving the licensee's AP1000 simulation facilities for use in administering the operating tests, the staff also approved an exemption so that these simulation facilities could be used to complete required control manipulations. In accordance with 10 CFR 55.31(a)(5), initial operator license applicants must complete at least five significant control manipulations on either the plant or a PRS. If a facility licensee proposes to use a PRS rather than the plant to meet the requirements in 55.31(a)(5), then, in accordance with 55.46(c)(2)(i), the PRS must replicate the most recent core load in the reference plant. The staff's SE that documents the staff's finding that the VEGP 3 & 4 CAS may be used for significant control manipulations (ML16131A843) explains why the exemption was necessary and the basis for the staff's finding:

> The staff's evaluation of the simulation facility for VEGP 3 & 4 concluded that the simulation facility for VEGP 3 & 4 provides the necessary reactor physics, thermal hydraulic, and integrated system modeling of the reference plant (i.e., the AP1000 plant as described in the design certification) necessary to perform operator license examinations. This modeling includes the predicted core performance instead of the most recent core load. Because VEGP 3 & 4 is under construction, plant experience from the most recent core load is not available. Predicted core performance is acceptable because operating experience with core design has demonstrated that the reactor physics and thermal hydraulic characteristics associated with a core design can be accurately predicted. As described in the staff's evaluation of the simulation facility for VEGP 3 & 4, simulator performance testing has demonstrated that the core performance predictions have been accurately modeled.

Lessons Learned and Additional Recommendations

Lesson Learned #1

The first lesson learned the team identified is that the ISV may not need to be completed in order to approve a simulation facility for the same purposes as that of a PRS. Additionally, it is not possible to perform significant control manipulations on the plant at a new site under construction or for a simulator at a new reactor site to "replicate the most recent core load" until fuel has been loaded, which occurs well after the time when operators need to be licensed. All future facility licensees will need to request the same exemption unless the rule is changed.

Furthermore, the team considered the differences between nuclear power plant simulator use and development today compared to when the current regulations in Part 55 were established, and the team recommends development of a comprehensive rule to address requirements for nuclear power plant simulators at facilities under construction. When the current regulations in Part 55 for simulation facilities were established, the simulators were built after the plant had been constructed. That is not the case today. Vendors of new reactor designs are building and using simulators for use in the development of the design (e.g., the Westinghouse AP1000 simulators at VEPG 3 & 4 and the NuScale Standard Plant simulator at NuScale's headquarters) well before plant construction commences. The design of a new reactor's control room human-system interfaces (HSIs) and the plant systems evolve and become more detailed from pre-design certification through design certification and continues to evolve through the COL application and construction process as the detailed design develops and any changes to the design are implemented. (Even after construction, plant systems and HSIs are modified over the life of the plant.)

Prior to fuel loading, facilities need to license operators. The earlier in the design development process that examinations are administered, the larger the potential there is for aspects of the design modeled by the simulator to deviate from the design of the plant that the operators will be licensed to operate. The team thinks there is a minimum threshold below which these deviations would render the simulator unsuitable for administering operating tests and performing control manipulations. At a minimum, the team thinks the control manipulations and the operating test should be performed on a simulator that has demonstrated sufficient (1) fidelity to the design, as the design has been established per the vendor's design control processes and as it exists at the particular point in time, and (2) capability to develop operating tests that will meet the examination standards and to perform significant control manipulations that satisfy the requirements of 55.31(a)(5). The team thinks that as long as the simulator meets these criteria for simulator fidelity and capability, and as long as adequate design change control processes and training programs are established by the facility licensee, then there will be adequate controls to ensure the operators are trained on changes that occur between the time they take an exam and actually operate the plant, which may be a period of several years based on experience at VEGP 3 & 4.

Quality assurance (QA) requirements related to controlling design changes exist in 10 CFR Part 50 Appendix B, and they are applicable to facility licensees of new reactors. A requirement for continuing training of licensed operators, to include training on plant design changes, exists in 10 CFR 55.59. However, per 50.54(i-1), facility licensees are not required to implement a requalification training program that meets the requirements of 55.59 until after an operating license has been issued or after the date that the Commission makes the finding under

52.103(g) of this chapter for a combined license, as applicable. The time between passing an exam and receiving a license could be significantly longer than three months (as has been shown at VEGP 3 & 4). Thus, there is no current requirement that facility licensees establish a continuing training program to ensure operator license applicants and holders are sufficiently trained on changes that occur during the time between when they take an exam and actually operate the plant and on initial training topics.

Additional Team Recommendation #1

As a result, the team recommends that rulemaking be considered to address a new classification for simulators that will be used for the same purposes as a PRS (i.e., for administering operating tests and performing significant control manipulations) while a nuclear reactor facility is under construction (i.e., prior to fuel load). The team recommends either that 55.46 be revised or that new requirements be added to part 55. The new requirements should be similar to the requirements for a PRS in 55.46(c) with changes made (underlined below). The team recommends these changes be made in order to (1) address the realistic circumstances of new reactor facilities under construction and (2) ensure that simulation facilities for non-light water reactors have an adequate scope of simulation:

- Consistent with 55.46(c)(1), the simulation facility must demonstrate expected plant response to operator input and to normal, transient and accident conditions to which the simulator has been designed to respond.
    - Consistent with 55.46(c)(1)(i), the simulation facility must be sufficient in scope and fidelity to allow conduct of evolutions listed in 10 CFR 55.45(a)(1) through (13), and 55.59(c)(3)(i) (A) through (AA), as applicable to the <u>plant design</u>.

      Additionally, the evolutions in 55.59(c)(3)(i) (A) through (AA) are applicable to pressurized and boiling water reactors. There may be other important normal, abnormal and emergency evolutions that are not in currently 55.59(c)(3)(i)(A) through (AA) and that are unique to non-light water reactor (LWR) designs. Therefore, the team recommends that the new rule require a simulation facility for a non-LWR design to be sufficient in scope and fidelity to allow the conduct of those evolutions.

    - Consistent with 55.46(c)(1)(ii), the simulation facility must allow for the completion of control manipulations required by 55.31(a)(5).
- Consistent with 55.46(c)(2)(i), to be used for significant control manipulations, the simulator must 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, <u>or, for facilities that have not yet loaded fuel, are based on predicted initial core load</u>.
- Consistent with 55.46(c)(2)(ii), simulator fidelity has been demonstrated so that significant control manipulations are completed without procedural exceptions, simulator performance exceptions, or deviations from the approved training scenario sequence.

As discussed in the recommendations for Task 1, it is anticipated that a facility licensee will inform the NRC when a determination has been made that the simulation facility meets these requirements. At this point, the NRC will assess the basis for this determination and, if needed, perform a simulator inspection in accordance with IP 41502. Thus, the team also recommends that if Additional Recommendation #1 to undertake a rulemaking is approved, IP 41502 should be evaluated to ensure it contains sufficient inspection guidance to adequately address the

requirements of the new rule.

In addition to these requirements for the simulation facility listed above, the team recommends 50.54(i-1) be revised to require new reactor facility licensees to establish the requalification program required by 55.59[2] no later than three months following the administration of the first NRC initial license exam at a new reactor site rather than three months following the 52.103(g) finding to ensure that individuals examined at earlier stages of the design and construction process are adequately trained on later plant modifications and design changes in order to operate the as-built plant.

Given there may be a significant amount of time needed to implement a new regulation, Additional Recommendations 2 and 3 should be considered to work within the existing regulatory infrastructure while a potential rulemaking is evaluated and implemented.

Lesson Learned #2

Establishing a PRS as defined in 10 CFR Part 55.4 may take substantially longer than facility licensees expect when completion of the control room HFE design (e.g., the ISV) occurs in parallel with construction. This situation occurs if the HFE design activities are design acceptance criteria (DAC) that are verified by ITAAC.

Other AP1000 licensees, such as Duke Energy and Florida Power and Light have the same HFE and I&C ITAAC in their licenses as SNC. However, the AP1000 vendor and SNC have completed the activities associated with the HFE and I&C ITAAC, and therefore the AP1000 main control room design has been established. Other AP1000 facility licensees will likely be able to procure a simulator at their site(s) that reflects the AP1000 HFE design that has already been established and proceed with the remaining activities for establishing a PRS as discussed in the PRS charter recommendations document. For this reason the team thinks it is less likely these licensees will decide it is necessary to submit a request for a CAS; however, these licensees will still need to request an exemption to conduct the significant control manipulations on their simulators until a new regulation is established, as discussed in "Additional Team Recommendation #1" above, or a rule change to 55.31(a)(5) occurs to allow significant control manipulations to be performed on a simulator that uses models that are based on predicted initial core load.

Additional Team Recommendation #2

Therefore, the team recommends that the staff engage with current licensees and future new reactor license applicants to understand the means by which they plan to achieve a simulation facility that is approved for use in the administration of operating tests and for performing significant control manipulations. In addition, the process that stakeholders will use to address unanticipated changes and issues should be considered. Sufficient time should be allocated to support implementation of the various alternatives. For other AP1000 facility licensees, the team recommends the engagement occur once these licensees inform the NRC that they will commence construction (at this time, none of these licensees have informed the NRC of any near-term or long-term plans to commence construction).

Lesson Learned #3

[2] The team noted that inspections of requalification programs are conducted using IP 71111.11, and the logistics of using this procedure for inspections at new reactor licensees under the CROP should be evaluated.

The SEs for the VEGP 3 & 4 and the VC Summer Units 2 & 3 simulators were written by staff at headquarters. There were several rounds of RAIs issued by the staff to the licensees to request more information related to simulator performance test results and deficiency logs. Also, the SEs relied in part on the results of partial simulator inspections performed by the region staff using IP 41502. The team thinks that information such as simulator performance test results and deficiency logs are most efficiently and effectively reviewed onsite at the licensee's simulation facility. The team considered whether it would be necessary for the staff to document its evaluation of any future requests for a CAS in an SE or if the staff could instead perform an inspection of a simulation facility and document approval in an inspection report and/or letter to the facility licensee. A benefit of writing an SE to document the staff's evaluation of a CAS request is that the SE format would include more explanation of how a simulation facility meets the requirements for a CAS and thus why it is acceptable for use in operating tests. Such information may be useful to the staff if any operator licensing decisions are challenged on the basis that the simulator was not acceptable for use in the administration of the operating test.

Additional Team Recommendation #3

Staff examiners routinely review and evaluate simulator performance test results and deficiency logs at simulation facilities and thus have the expertise to evaluate a simulation facility against the generic CAS acceptance criteria. The team recommends that after a facility licensee provides the items required by 55.46(b)(1), the staff should then conduct an audit at the simulation facility. The audit results can be documented in the audit report, which can be referenced in the SE and used to help support a finding that the simulation facility is suitable for the administration of operating tests. Conducting an onsite audit should improve efficiency of the review by reducing the number of RAIs issued and the amount of time to complete the review.

Generic CAS Acceptance Criteria and Evaluation Guidance

10 CFR 55.46, "Simulation facilities," addresses the use of simulation facilities for the administration of the operating test and plant-referenced simulators to meet experience requirements for applicants for operator and senior operator licenses. Specifically, 10 CFR 55.46(b), Commission-approved simulation facilities and Commission approval of use of the plant in the administration of the operating test, states:

> (1) Facility licensees that propose to use a simulation facility, other than a plant-referenced simulator, or the plant in the administration of the operating test under 10 CFR 55.45(b)(1) or 55.45(b)(3), shall request approval from the Commission.
>
> This request must include:
>
> (i) A description of the components of the simulation facility intended to be used, or the way the plant would be used for each part of the operating test, unless previously approved;
> (ii) A description of the performance tests for the simulation facility as part of the request, and the results of these tests; and
> (iii) A description of the procedures for maintaining examination

and test integrity consistent with the requirements of § 55.49.

(2) The Commission will approve a simulation facility or use of the plant for administration of operating tests if it finds that the simulation facility and its proposed use, or the proposed use of the plant, are suitable for the conduct of operating tests for the facility licensee's reference plant under 10 CFR 55.45(a).

There are no other specific CAS requirements in the Code of Federal Regulations.

In order to make a determination as to whether the simulation facility should be approved in accordance with 55.46(b)(2), the team recommends the staff use the evaluation guidance to compare the facility licensee's simulation facility to the acceptance criteria listed in Table 1 below. The team developed the table by reviewing the VEGP 3 & 4 SE and identifying the criteria from ANS 3.5-1998, which is the version of the guidance that SNC was committed to when the request was submitted, the staff used to evaluate the simulation facilities. (The sections listed in Table 1 are the same as those in the 2009 version of the ANS 3.5 standard as endorsed by the most recent revision of RG 1.149[3].) As documented in the SEs, the staff used the criteria in ANS 3.5 listed below in Table 1 to determine there was reasonable assurance of the following:

- The simulation facility can be used to administer operating tests that require an applicant to demonstrate an understanding of and the ability to perform the actions necessary to accomplish a representative sample of the 13 items listed in 10 CFR 55.45(a) and that the simulation facility's response will model that of the reference plant during the operating tests.
- The simulation facility can perform a sufficient number of operating tests for any one of the 13 items in 10 CFR 55.45(a) so that a licensing examination is not predictable.
- Any open simulator discrepancies will not negatively affect a licensing examination.

Table 1: Generic Acceptance Criteria and Evaluation Guidance

55.46(b)1 Requirement	Acceptance Criteria (AC)	How to evaluate the AC
(i) A description of the components of the simulation facility intended to be used	Assess static components of the simulation facility and simulation capability: Consistent with ANS 3.5, Section 3.2, the simulator includes those operational panels, consoles, and operating stations required to provide the controls, instrumentation, alarms, and	Compare the plant systems modeled by the simulation facility with those listed in the FSAR. Plant systems that do not have HSIs in the MCR that operators use to conduct normal operations and respond to malfunctions do not need to be included in the scope of simulation. Additionally, if all of the HSIs that will be available in the control room are NOT modeled, that may also be acceptable as long as the simulator can still be used to administer

[3] If a subsequent revision of the ANS 3.5 standard is endorsed by the staff and a future facility licensee commits to that revision, then the information in the table may need to be evaluated to determine if changes are needed.

	other human-system interfaces (HSIs) used by operators to conduct the normal evolutions of ANS 3.5, Section 3.1.3 and respond to the malfunctions of Section 3.1.4.	operating tests that require the applicant to demonstrate an understanding of and the ability to perform the actions necessary to accomplish a representative sample from among the following 13 items in 55.45(a), the exams will not be predictable, and the missing HSI does not impact the actions to be taken by the operators.
	Assess dynamic components and simulation capability: The scope of simulation shall be to the extent necessary to allow the operator to perform the evolutions described in ANS 3.5, Section 3.1.3 and respond to the malfunctions described in ANS 3.5, Section 3.1.4. These systems shall be complete to the extent that the operator can perform these control manipulations and observe simulated unit response. The scope of simulation shall include system interactions with other simulated systems, so as to provide a total integrated unit response.	Review the ANS 3.5 performance tests conducted at the simulator. If the simulator has the capability of allowing operators to perform all of the normal evolutions and malfunctions, then the simulator has demonstrated sufficient scope of simulation such that the simulator can be used to administer operating tests that require the applicant to demonstrate an understanding of and the ability to perform the actions necessary to accomplish a representative sample from among the following 13 items in 55.45(a), and the exams will not be predictable. However, it may not be necessary for the simulator to have the capability to perform <u>all</u> of the normal evolutions and malfunctions listed in the ANS standard so long as the staff determines the simulator can still be used to administer operating tests that require the applicant to demonstrate an understanding of and the ability to perform the actions necessary to accomplish a representative sample from among the following 13 items in 55.45(a), and the exams will not be predictable.
(ii) A description of the performance tests for the simulation facility and the results	Assess fidelity of the simulation facility to the plant design: Consistent with ANS 3.5, Section 4.4.3, “Simulator Performance Testing,” simulator performance testing has been conducted and the test results are satisfactory, which demonstrates sufficient fidelity to the plant design.	Verify all performance tests that have been performed meet the ANS 3.5 acceptance criteria in Appendix B, per ANS 3.5, Section 4.4.3.1. If the acceptance criteria have not been met, ensure any deviations were identified and were either fixed or appropriately determined to remain as is. For those deviations that remain, review them to determine (1) whether they preclude the simulation facility from being used to administer

	Ensure any deficiencies are identified and corrected if necessary consistent with ANS 3.5, Section 4.2.1.4.	operating tests that contain a representative sample of the 13 items in 55.45(a) and (2) do not impact the actions to be taken by the operator per ANS 3.5, Section 4.2.1.4. If they do, then the facility licensee may need to correct these items prior to approving the simulator as a CAS.
(iii) A description of the procedures for maintaining examination and test integrity consistent with the requirements of 55.49.	The facility licensee has procedures maintaining examination and test integrity consistent with the requirements of 55.49.	Review the licensee's procedures for maintaining examination and test integrity and ensure they conform to NRC guidance for exam security (e.g., in NUREG-1021).

Task 2.b.

b. Evaluate inclusion of IP 41502, "Nuclear Power Plant Simulation Facilities," criteria.

Team Recommendations for Charter Task 2.b.

See Task 2.c. below.

Task 2.c.

c. Identify the appropriate document(s) in which to locate this information.

Team Recommendations for Charter Task 2.c

1. The team recommends rulemaking addressing 10 CFR Part 55 as well as Part 50.54(I-1) to incorporate lessons learned from the recent construction activities. The team recommends that this rulemaking consider the recommendations listed in this document during development.
2. If Additional Recommendation #1 to undertake a rulemaking is approved, IP 41502 should be evaluated and revised as necessary to ensure it contains sufficient inspection guidance to adequately address the requirements of the new rule.
3. The team recommends that NUREG-0800, Section 13.2.1, "Reactor Operator Requalification Program; Reactor Operator Training," be revised to include the guidance discussed in Additional Recommendation #2 and #3 above and the generic CAS acceptance criteria listed in Table 1. Additionally, the team recommends that IP 41502 be revised to include a pointer to NUREG-0800, Section 13.2.1, for where staff can find guidance for evaluating a CAS request.