

NUREG-1021 Revision 12 Public Comments

Number	Section	Comment Description	Recommendation	NRC Disposition
Section 1, General				
1	ES-1.1 page 1 (line 18)	How are procedures and guidance differentiated within the standard? How is each identified?	Provide clarification, if necessary, on the difference between procedures and guidance.	Added clarification: Procedures and guidance are normally identified in the introductory paragraph or identified in the section or subsection titles. This was added to ES 1.1, C.
2	ES-1.2 step 3, page 1 of 6 (line 41-46)	Missing statement "and the licensee shall first notify the NRC's regional office to ensure that a point of contact remains available to respond to questions." Is contact no longer required or not allowed?	Confirm if NRC contact is required during written exam and ensure it is added back in the section if so intended.	No change required. The NRC point of contact is still necessary if the NRC is not on site during the written examination. See ES 4.3 for Written Examination Administration.
3	ES-1.2 step 4, page 2 of 6 (line 10-12)	Indicates that applicants' tablets, cell phones or other communication devices are not allowed into the examination room for the written exam. There is no corresponding statement about them not being allowed during the operating test.	Add similar wording to the operating test section if they are not allowed or add a statement that they cannot be used if that is the intent. Another option would be to place the statement in the overall section covering all aspects of the exam.	Added an item to the Operating Test Guidelines in ES 1.2: Applicants shall not use personal cell phones or electronic devices during the operating test.
4	ES-1.2 step 7, page 2 of 6 (line 30)	States; "Note that answers to questions you asked during the examination are documented and taken into consideration during the grading process." To improve clarity and intend, ensure that questions asked and answers provided will be documented.	Consider modifying the statement to include questions and answers will be documented.	Added to the same sentence that questions will also be documented.

5	ES-1.2, step 10, page 4 of 6 (lines 34-35)	The following statement was removed: "Many of the questions will require you to use plant reference material, while others should be answered without the use of references. If you need to consult a reference to answer a question, ask the examiner if it is acceptable to do so." Should that guidance be added back for clarity?	Add statement back in from Rev. 11 if the intent is still for applicants to request permission to use a reference.	No change made because this statement appears in the ES 1.2 Section C, "General Operating Test Guidelines," as No. 3. This type of information was relocated to the subsection as part of the streamline effort.
6	ES-1.2 B.2, Page 1 of 6 (line 34-39)	This statement was deleted from R12 ES-1.2 B.2 (R11 Appendix E B.2): "SRO-U applicants who do take the RO portion of the exam and score below 80 percent on that part of the exam can still pass overall but may require remediation." Does this change imply that an SRO-U who takes the RO portion of the examination with overall grade of 80% and greater than 70% on SRO-only items no longer require analysis for RO questions to determine if remediation is required?	Confirm if statement should be added to R12 ES-1.2.	No change made. In ES 2.1, A, "General Guidelines, " the term "additional training" was used to replace "remediation training" and this now applies to ANY applicant that demonstrates deficiencies on the written examination, not just SRO-U applicants. In other words, the training organization should make sure that the applicants understand what questions they got wrong and why. This is an expectation of a SAT based training program.

7	ES-1.2 B.3, Pages 1 to 2)	<p>ES-1.2 B.3 pages 1-2 outlines times for completing initial and requal examinations. The first paragraph states: "The times allotted for taking each examination noted above shall not be extended except for unavoidable situations (e.g., loss of power, building evacuation, emergency" response). The following paragraph states: "For a requalification examination, the time limit for completing both sections of the examination is 3 hours." Is the intent that the time for requal exams not be extended as well?</p> <p>Additionally, does the time limit for requal exams only apply for NRC developed requal exams? If a utility procedure states that an extension may be granted, is that acceptable?</p>	<p>The statement of not extending time should either be repeated or modified to state that there are no time extensions for either exams.</p> <p>Provide clarification if it is acceptable if a utility procedure states that an extension may be granted</p>	<p>The time allotments are for NRC conducted requalification examinations. Revised the statement to allow for extensions resulting from unavoidable circumstances.</p>
8	ES-1.2 D.5, Page 4 of 6 (line 6-8)	<p>From R11 Appendix E D.3, statement was added "If the JPM task requires the opening of panel doors, check with your examiner before opening the door; the examiner will let you know if the operating crew has given permission."</p> <p>Does this change indicate that requirements to open cabinet doors be discretely evaluated during JPM development and results included in the JPM?</p>	<p>If consideration for how to coordinate opening doors with control room staff should be included as an examiner cue within JPMs, consider adding appropriate guidance to ES-3.2, Developing Job Performance Measures.</p>	<p>No change made. This statement was added based on operating experience from past JPMs in the plant. Regarding the second part of the comment, anything the applicant does during the JPM can be considered in the evaluation of the applicant's performance.</p>

9	ES-1.2 E.5, Page 5 of 6 (line 23-24)	R12 ES-1.2 E.5 (from R11 Appendix E E.5) added the statement; "the examiner may consider these notes when evaluating your performance." What is intent of this statement? If rough logs are not maintained, how will it impact evaluation? Statement implies additional importance has been placed on maintaining rough logs, which could be reconstructed post-event using event recorders, chart recorders, computer logging, etc.	Consider removing statement or provide clarification on how these notes will be evaluated.	The NRC added, "the examiner may consider these notes when evaluating your performance," because this type of information is something the applicant is expected to know before taking the operating test. Rough logs can provide an examiner information about applicant knowledge. Simulator logs do not provide this type of performance information.
10	ES-1.2 E. 11, Page 6 of 6 (line 7)	R11 Appendix E E.11 stated "You may be given a short break between scenarios," which was deleted in R12. Does this change imply that breaks between scenarios are no longer permitted or is level of detail being reduced?	Confirm intent of change in R12 change summary or include allowance to provide break in R12.	No change made. The change is not needed because applicant breaks are in accordance with facility licensee procedures and the examination schedule; this level of detail was removed from the ES 1.2 Guidelines. The facility licensee and the NRC chief examiner coordinate the examination schedule in accordance with ES 3.5.
Section 2, Pre-Examination Activities				
11	ES-2.1 page 8 of 20 (lines 30-31)	Statement is incomplete; should include review findings to the written exam and op-test.	Consider adding more detail to the statement to include review findings to the written exam and op-test.	Change made consistent with the recommendation, added written examination and operating test to the scope of this step.
12	ES-2.1 page 10 of 20 (line 9-15)	Is there any time limit on previous employment? Example, if an examiner worked at a utility 10 years ago when the candidates were in initial non- licensed operator training are they allowed to be part of the license exam?	Add a time limit to this restriction.	No change made because there is no time limit for this situation. The restriction is for an NRC examiner that was previously employed at the facility AND involved in training any of the current license applicants.

13	ES-2.1, 4.a.(4) Page 12 of 20 Lines 10 thru 15	<p>This item requires the facility to submit their entire JPM bank as part of the reference material to provide for each operator licensing initial examination. Significant resources can be expended in order to maintain an entire JPM bank ready for use at any time.</p> <p>Additionally, the wording of this requirement infers that the JPM bank will reach a finite size, however exam development rules require new or modified JPMs to be developed with each exam. In practice, a new or modified JPM could be developed to test much of the facility's job task analysis.</p> <p>For cold licensing plants, the number of available JPMs may be small, and the in-plant JPMs will be constructed to use the alternative means described in ES-3.7.</p>	Reword this requirement for the facility to submit a list of available JPMs, along with a status of each one to indicate if it is, or was, recently validated and considered ready to use.	No change made because the beginning of ES 2.1 F says that this list can be tailored for the specific examination. This should be coordinated with the NRC chief examiner during the initial meeting.
14	ES-2.1, 4.o.(2) and 4.o.(4) Page 13 of 20 Lines 2 thru 5, and 8 thru 10	<p>This item requires the facility to submit a list of all malfunctions that the simulator can perform, with cause-and-effect information and concise descriptions of each. Many simulators available for use at newer plants, and at existing fleet plant, have vast capabilities to make variable malfunctions. As this capability has expanded, the severity of malfunctions is more and more dependent on the starting conditions when they occur.</p>	Recommend rewording this requirement to provide a list of the available malfunctions	No change made. The recommendation may not provide enough information about the available malfunctions for NRC developed examinations or for NRC review of facility licensee examinations. Additionally, ES 2.1, F states: The NRC expects facility licensees to provide reference materials for each NRC operator licensing initial examination. The NRC regional office will customize the list of reference materials to support the specific examination assignment. The regional office shall consider the administrative burden it places on the facility licensee and will request

15	ES-2.1 page 17 of 20, Form 2.1-1	Previous version contained references to the applicable Section of the standard. This was useful for reviewing the actual requirement/guideline.	Recommend adding them back in.	References added to Form 2.1-1
16	ES-2.1, Figure 1 Page 15 of 20 Line 1	<p>Figure 1 identifies operator licensing milestones for 10 CFR Part 52 plants under construction. Consider making the following changes, based on experiences gained during current new plant deployment activities:</p> <ul style="list-style-type: none"> ☐ The initial accreditation of operator licensing training programs did not occur until close to, or following the start of the first training programs ☐ The K/A catalogs for new plants were used as drafts, rather than as approved catalogs ☐ Additional effort may be required very early in the process to identify potential changes needed for licensing exams on plants using new technology 	<ul style="list-style-type: none"> ☐ Recommend moving the milestone for start of monitoring initial accreditation activities closer to the start of the first class, and add an additional milestone for the completion of full accreditation before 103(g) finding ☐ Consider changing K/A catalog bullet to identify a draft catalog will be used ☐ Add a new bullet early in the process to consider exam methodology changes 	Additional information has been added on how to use Figure 1 in ES 2.2. This figure contains a suggested sequence of milestones and is not expected to encompass every new reactor case. Use of a draft K/A catalog is an option that was used for developing some AP1000 examinations but that may or may not be necessary in all future new reactors cases.
17	ES-2.1, Form 2.1-1, item #10	The 75-day submittal to the facility for an NRC developed exam does not provide adequate time for technical review and validation. When the facility develops the exam and submits it to the NRC at -75 days (i.e., item #9) the exam has already been technically reviewed and validated. The timeline for an NRC developed exam that is submitted to the facility PRIOR to facility technical review and validation needs to be extended.	Extend timeline for NRC developed exams from -75 days to at least -90 days to account for the additional time needed for facility technical review and validation.	Changed to -100 days based on this recommendation and lessons learned report from the 2018 Ginna examination.

18	ES-2.2, page 3 of 22 (starting on line 10)	<p>Section references ACAD 10-001, Revision 1. Revised eligibility requirements are contained in ACAD 10-001, Revision 2, which will be released soon.</p> <p>Additionally, the ACAD may be revised more frequently than NUREG 1021 to update programmatic requirements for initial license program content. A revision stating to reference the latest revision of ACAD 10-001 or latest revision of the NANT academy guideline for operator eligibility and selection would be more accurate.</p>	<p>Revise to reference ACAD 10-001, Revision 2 or make a general statement to reference the latest revision of the ACAD 10-001 or latest revision of NANT academy guideline since the NRC participates in the revision process per INPO guidance.</p>	<p>Changes were made to ES 2.2 to recognize ACAD-10-001 as part of the NANT guidelines for NNAB-accredited training programs and to make this a more general recognition of the process and not a specific revision of the ACAD.</p>
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19	ES-2.2 Section F.2.b	<p>A regulatory basis for the number of hours considered extensive actual operating experience in ES 2.2 Section F.2.b, "Multiunit Examination Waiver," is not provided in the draft NUREG. Additionally, the proposed wording appears inadequate to address multiunit stations that are built simultaneously to a Part 52 certified standard design. Though the additional operating experience may be necessary for operating a subsequent unit with significant differences from existing unit(s), it is unnecessary when operating identical units. Because design certification and ITAAC ensures subsequent units are essentially the same, operators licensed on the first unit built have already taken an examination applicable to subsequent units, provided the licensee can demonstrate that there are no examinable differences between the units.</p>	SNC recommends flexibility in the NUREG to provide NRC staff guidance to address the varying degrees of unit similarity and time lapses between construction for which licensees may request a waiver under § 55.47 (e.g., Part 50 plants decades apart vs. Part 52 plants months apart).	<p>Added basis to ES 2.2 for 520 hours which is equivalent to the unit familiarity time period used in initial licensing training programs. The NRC plans to amend § 55.47 as part of the "Alignment of Licensing Processes and Lessons Learned from New Reactor Licensing" rulemaking (Docket ID NRC-2009-0196). Specifically, the NRC would add a new set of criteria that justify a waiver of any or all of the written examination and operating test for applicants to be licensed on subsequent units at a multiunit site that is under construction. Thus, the new criteria would address multiunit stations that are built simultaneously to a Part 52 certified standard design.</p>
20	ES-2.3 Form 2.3-2, page 9 of 19	<p>Item a of Simulator references Form 2.3-1. Should it be Form 3.4-1? Consider switching items a and b under JPMs.</p>	Verify the correct form to reference, and consider if items a and b should be switched.	Change made consistent with the recommendation.

21	Form 2.3-2 (revised op test QA form), ES-2.3, page 10 of 19	A bullet has been added under Walkthrough Criteria, that states "specific designation if it meets alternate path criteria." JPM cover sheets typically designate alternate path. This information is also typically in the body of the JPM.	Provide clarification if the added bullet results in new/additional requirements for alternate path JPMs.	Change made to clarify that this is simply a label and not a new requirement for alternate path JPM. The added bullet is a check that the alternate path JPMS are labeled or marked as "alternate path" to distinguish them the same way that a time critical JPM is marked to distinguish it for notification purposes.
22	ES-2.2 C.3, page 5 of 22 (line 7)	R11 ES-202 C.1.c description for control manipulations states "Every effort should be made to perform at least some of the manipulations on the actual plant and to diversify the reactivity and power changes for each applicant." R12 does not include this clarification. This change appears to reduce importance of performing control manipulations on the actual plant.	Confirm that this clarification is not required.	No change made. The statement from Revision 11 to perform some of the manipulations in the plant was removed because 10 CFR 55.31(a)(5) allows these to be performed on the facility for which the license is sought or on a plant-referenced simulator. The information about diversifying them still exists in Revision 12: "Applicants should perform diverse significant control manipulations."

23	ES-2.2 C.3, page 5 of 22 (line 19-20)	R11 ES-202 C.1.c. description for control manipulations states “while those on the plant may be smaller but of sufficient magnitude for the operator to experience appropriate feedback (i.e., clearly observable effects on the plant, which could include maintaining power constant while performing a dilution/boration evolution) as a result of the control manipulation” would be considered. R12 does not include this clarification. Without this clarification, boration or dilution of any magnitude would seem to satisfy performance of a control manipulation.	Confirm that this clarification is not required.	Added a pointer in ES 2.2 to the definition of significant control manipulation in the glossary (ES-8). The definition in ES 8 of Significant Control Manipulations states: An operation (excluding those required for fuel handling) of an apparatus or mechanism that directly affects the reactivity or power level of a critical reactor by an amount of sufficient magnitude to allow for the observation of clear effects on the plant by the operator.
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24	ES-2.2, A, 7th paragraph Page 2 of 22, Lines 11 thru 20	<p>This section discusses cold licensing of operators, and endorses Nuclear Energy Institute (NEI) 06-13A, "Template for an Industry Training Program Description" as an acceptable method to acquire the knowledge and experience required.</p> <p>Specifically it endorses Revision 2, and the attached safety evaluation. NEI 06-13A Revision 2, in turn, references Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants", revision 3 and ANSI/ANS-3.1-1993, "Selection, Qualification and Training of Personnel for Nuclear Power Plants". Regulatory Guide 1.8 has been revised to revision 4 since the SER for NEI 06-13A was issued. The ANSI standard has also be revised to the 3.1-2014 revision, and is no longer endorsed by Regulatory Guide 1.8, revision 4.</p> <p>Additionally, NEI 06-13A does not specifically address newer advanced designed, passively cooled reactors that have alternative staffing requirements.</p>	Consider revising this section to state that facilities may seek other alternative methods to meet these requirements.	Added statement: Facility licensees may seek alternative methods for the cold licensing of operators.
25	ES-2.2, B, 3rd paragraph Page 3 of 22, Lines 12 and 13	The NANT guideline ACAD 10-001, revision 1, is identified as an acceptable method for meeting the eligibility requirements for education and experience. This document is currently being revised to the next revision.	Update this reference to the newest revision if it is published prior to the approval of this NUREG.	Same disposition as comment 18

26	ES-2.2, C, 3, 3rd paragraph Page 5 of 22, Lines 20 thru 22	<p>This section states that for control manipulations performed on a simulator to count towards the five required control manipulation, they are required here to be performed on a plant-referenced simulator that meets the requirements of 10 CFR 55.46(c). This would be a plant-referenced simulator (PRS), not a commission-approved simulator (CAS).</p> <p>Also, section G.2.a, on page 15 of this section, lines 24 thru 26, states that cold plant applicants may defer these manipulations until they can be completed on a plant-referenced simulator.</p> <p>The current definition of a PRS in 10 CFR 55.46, (c)(2)(i) states that the simulator models relating to nuclear and thermal- hydraulic characteristics that replicate the most recent core load in the referenced plant. It is not clear how the first operators at a cold plant will be able to do this if plant performance data is required before a simulator can meet this PRS requirement.</p>	<p>Recommend revising section C, 2, 3 to state clearly how, during cold licensing of operators, control manipulations can only be performed on a plant- referenced simulator, not on a commission- approved simulator. Also consider removing the allowance for “cold plants” to defer the control manipulations until a PRS is available, in section G.2.a.</p> <p>Also revise the definition of plant- referenced simulator (in the glossary) to include how significant control manipulations can be performed during the cold license phase.</p>	<p>The NRC staff is considering the issues highlighted in this comment in the Parts 50 and 52 alignment rulemaking. The proposed changes are described in Regulatory Basis for Public Comment (ML20149K680), Appendix E.</p>
27	ES-2.3, page 4, line 15	“Actions” is used twice in this sentence.	Delete the 2nd “actions”.	Deleted the second "actions."
28	ES-2.3, page 5, lines 38-41	This is redundant to page 4, lines 25-28.	Delete one instance of this sentence.	Deleted the first occurrence of this statement in lines 25-28 on page 4.

29	ES-2.3, Page 6 of 19, line 34-36, After C. 4. c.	<p>This step states that the written examinations and operating test should not overlap in their content. However, the example provided is too limiting as it defines overlap exists if the same pressurizer level controller concept is tested during a simulator event and in a written examination question.</p> <p>The term concept should be refined to allow subsets of a concept to be tested if they have different recovery actions.</p>	<p>Recommend adding example of controller failing upscale on the operating exam and the same controller failing downscale on the written exam. This illustrates that this is different enough to both be allowed on the same examination and does not violate the overlap restrictions.</p>	<p>The example was revised to clarify: For example, overlap exists if the same pressurizer level controller failure (i.e., fails “high”) is tested during a simulator event and in a written examination question.</p>
30	ES-2.3, page 11 and 16, Form 2.3-2	<p># note at bottom of page 11 and page 16 should state “exam” or “test” vice “outline”. This looks like a copy and paste error from Form 2.3-1.</p>	<p>Update form as stated.</p>	<p>Change made in accordance with the comment.</p>
31	Form 2.3-5 Instructions for Written Examination Review Worksheet ES-4.2, Page 9 of 29 Lines 4-12	<p>Form 2.3-5 and ES-4.2 have conflicting information covering the written examination level of difficulty. The form uses LOD rating 1-5 and ES-4.2 discusses a percentage.</p>	<p>Recommend aligning the two sections to reflect the LOD 1-5 requirement.</p>	<p>Clarification was added to what the term 'difficult level' means in ES 4.2 by replacing that term with a better description. Correlating difficulty level with LOD is outside the scope of this revision.</p>

32	Form 2.3-5 Written Examination Review Worksheet	During a public meeting the NRC stated that on this form they, "added check for technical reference and direct look-up questions." There is not a box for references on the form. In the instructions section for the worksheet, Item #2 Level of Difficulty, it discusses that a direct lookup should be marked LOD 1. The intent should be more clearly stated in the form.	Recommend adding a box on the actual form to review the provided reference to make sure it is not a direct lookup and that the reference does not provide additional information that would help answer another question on the test.	No change required. Form 2.3-4, "Written Examination Quality Checklist" includes a check for each question to have a technical reference. Direct look-up questions are to be marked as LOD 1 on Form 2.3-5 in accordance with the instructions on this form. Step 8 on Form 2.3-4 includes a check that reference material does not give away answers.
33	ES-2.3, Page 13 of 19, Form 2.3-3 Instructions for Completing the JPM Table ES-3.2, Page 7 of 18, Line 10	Each JPM must contain at least two critical steps. An exception to this requirement should be made for admin JPMs. The Admin JPM task standard should be to match the answer key. The Admin JPMs should not be held to a minimum number of critical steps. (Example: How many steps do you have to have for an EAL call? They should make the proper declaration in the required amount of time.)	Recommend that the Admin JPM task standard should state match the answer key vice require a minimum of two critical steps.	No change made. Regarding the example of EAL determinations, two typical critical steps are the EAL classification within the time period (15 minutes).
Section 3, Operating Tests				
34	ES-3.1, page 4 of 5 (lines 35 and 38)	Steps 13.b and 13.c cover the same topic, using JPMs to test knowledge of the differences between plants on multi-unit sites.	Consider combining the two steps into one step.	Deleted the sentence in 13.b "Consider doing JPMS on the other unit."

35	ES-3.2, page 2 of 18 (line 29)	ES-3.2, B.3.a. lists examples for Conduct of Ops Topics, including “access controls for vital/controlled plant areas.” However, Rev 3 of NUREG-1123 deleted KA 2.1.13, “Knowledge of facility requirements for controlling vital/controlled access.” That’s the only KA statement that was applicable to that example.	“Access controls for vital/controlled plant areas” should no longer be used as an example. Recommend replacement with a new example.	This K/A was deleted in the latest revision for the PWR, BWR, and AP1000 K/A catalogs, but still remains in the ABWR catalog (2.1.11). Deleted the example per the recommendations, and replacing with a new example is not needed, as there are several examples listed.
36	ES-3.2, page 3 of 18 (lines 26-32)	Bullet formatting is different than 3.a and 3. b.	Consider closing bulleted lines (i.e., no space in between each bulleted line).	Spacing between bullets adjusted to match the rest of ES-3.2.
37	ES-3.2, page 3 of 18 (line 31)	ES-3.2, B.3.c. lists examples for Radiation Control Topics, including “radiation work permits.” However, Rev 3 of NUREG-1123 deleted KA 2.3.7, the only KA that was associated with radiation work permits.	“Radiation work permits” should no longer be used as an example. Recommend replacement with a new example.	This K/A was deleted in the latest revision for the PWR, BWR, and AP1000 K/A catalogs, but still remains in the ABWR catalog (2.3.4). Deleted the example per the recommendations, and replacing with a new example is not needed, as there are several examples listed.
38	ES-3.2, page 7 of 18 (lines 5-6, and 27-30)	Is this new text?	Provide clarification whether or not this is a new comment.	The clarification that a critical step might not involve a verifiable action and two examples are new for Rev 12. The specification to include JPM termination criteria was added because in practice examination authors included criteria for when a JPM should be terminated.

39	ES-3.2, page 9 of 18 (line 20)	Definition/standard of alternate path JPM should be clearly stated in this section since the term is introduced.	Add clarification to this section.	There is not a definition of alternate path JPM for the glossary. The following clarification was added on page 9: An alternate path JPM allows the NRC to evaluate whether the applicant has the skills and knowledge at the level needed to safely operate the system, and the ability to recognize and diagnose an unexpected system response and then execute one or more alternative paths within the wide spectrum of procedures under the applicant's cognizance; these are typically procedures that the applicant would not otherwise be examined on. Additionally, added to 1. Success Path the following: The success path must be an alternate path that differs from the normal success path in order to test the applicant's ability to use an alternate operation.
40	ES-3.2, page 9 of 18 (lines 26-28)	Sentence is incomplete; should be preceded by "Alternate path JPMs are used...". Additionally, it appears that there are two separate subjects: 1) what the intent of alternate path JPMs is; and 2) how the alternated path is implemented.	Revise the sentence.	Revised the sentence in accordance with the recommendation and deleted the term "observe" since this implied that it was done during JPM implementation.
41	ES-3.2, page 12 of 18 Form 3.2-1, step 3	The phrase "senior reactor operator" is spelled out, unlike RO, even though it is a standard abbreviation (on list of abbreviations).	Consider using "SRO" vice "senior reactor operator" for consistency.	Change made in accordance with the comment.

42	ES-3.2 D.1.c, Page 7 of 18 (line 10)	<p>ES-3.2 D.1.c requires JPMs to contain at least two critical steps.</p> <p>Some safety significant tasks may require completion of a single critical step to demonstrate competent performance. For example, once RCP trip criteria are met following a small break LOCA, the verifiable critical step is simply stopping the RCPs. Requiring two critical steps for a JPM may eliminate testing of some safety significant tasks from the examination bank or require extensive revision of JPMs to include two critical steps without a corresponding increase in safety significance.</p>	Consider removing requirement for two critical steps for a JPM.	No change made. This requirement is aligned with Rev 11 guidance for limiting the use of simple one step JPMs. Each JPM must contain at least two critical steps because this is what is practiced. The example provided in the comment for tripping RCPs could be split into more than one critical step, for example, each RCP trip is one critical step.
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43	ES-3.2 D.1.c, Page 7 of 18 (line 28-30)	<p>R12 ES-3.2 D.1.d requires including a statement that describes the conditions to be met for the NRC examiner to terminate the JPM, considering both applicant success and failure to meet the task standard. Although applicant success with completing the task may be predictable given confines of task performance outlined in the JPM, potential failure modes may be less so. For example, the applicant may not be able to locate the appropriate equipment in the field, perform the task on the wrong Unit, fail to correctly engage a manual override, etc. Including all these potential failure paths into the evaluation tool may make it unwieldy and confusing. ES-3.2 D.1.d contains a requirement to "Include a statement that describes the conditions to be met for the NRC examiner to terminate the JPM." This guidance would seem adequate.</p>	Consider removing requirement that implies JPM termination requirements require applicant success and failure conditions to be included in the JPM.	Added clarification that this is not a requirement by adding the words "such as." This was added in Rev. 12 because it is what is being practiced and is consistent with the steps of developing a JPM. The intent is not to make the examiner list ALL possible failure modes.
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44	ES-3.3, page 1 of 17 (line 1 and line 26)	<p>Primarily from Appendix D of R11. A better title for this standard might be "Generic...."</p> <p>Consider making this an Attachment to ES 3.4 rather than a stand alone standard.</p> <p>For line 26, The following paragraph simply describes what the objective of using a Sim Scenario is and does not provide any direction for determining objectives of any given scenario. This information is better suited for the preceding introduction.</p>	<p>Consider making this an Attachment to ES 3.4 rather than a stand alone standard.</p> <p>Consider placing the paragraph after line 26 in the preceding introduction.</p>	<p>Added "General" to the title of this section. The material in this section does not need to be moved to another section.</p>
45	ES-3.3, page 1 of 17 (lines 5, 6 and 22, 23)	<p>Text states the guidelines also apply to requalification examinations. It is unclear what specifically applies to requalification programs and what is inspectable per IP 71111.11, if anything. Clarify if the guidelines only apply when the NRC writes a requalification exam per ES-6.</p>	<p>Clarify how simulator testing guidelines specifically apply to requalification programs, if at all, and if IP 71111.11 will change to incorporate those specific requirements.</p>	<p>Added clarification that this would apply to NRC conducted requalification examinations.</p>
46	ES-3.3, page 1 of 17 (lines 42 and 43)	<p>Step 2 states "...the IC should be representative of a typical plant status with various components, instruments, and annunciators out of service." Although this is not a change from Rev. 11, it seems to denote an unnecessary requirement by not allowing "clean" ICs.</p>	<p>Revise to state: "...the IC should be representative of a typical plant status, which may include various components, instruments, and annunciators out of service."</p>	<p>Added clarification for ICs in accordance with the recommendation.</p>

47	ES-3.3, page 2 of 17 (line 18)	The last sentence of the paragraph states: "As such, the operating test should not include such <u>events they</u> are necessary to set the stage for subsequent events or to test the SRO applicant's knowledge of TS actions." It appears the word "unless" should be included before "they."	Add "unless" between "events" and "they" in the sentence to correct the statement.	Change made in accordance with the recommendation.
48	ES-3.3, page 5 of 17 (line 10)	The word "with" does not seem to belong in the following sentence. "If this "jump" is used, the crew must receive <u>with</u> a turnover or cue addressing any relevant plant conditions that changed due to the time compression."	Remove "with" or revise to clarify intent.	Change made in accordance with the recommendation.
49	ES-3.3, page 8 of 17 (starting at line 8)	This states a component/instrument failure that occurs before the major event could be credited for actions before AND after the major event provided the actions to deal with the failure are different when comparing the response before and after. The provided example of excess letdown demonstrates when this could NOT be used since excess letdown actions are the same both before and after the major event. Is it acceptable to count the same malfunction twice, once before and once after the major, provided the actions to address the failure are different?	Provide a positive example of using this allowance to add clarity of acceptance.	Change made in accordance with the recommendation. Added a positive example of how to use this allowance in ES 3.3.

50	ES-3.3, page 10 of 17 item 3, (lines 42, 43) and page 11 of 17 (line 1)	Formatting is different for the Combustion Engineering PWR as compared to the others (double spacing between bulleted lines).	Close bulleted lines (i.e., no space in between each bulleted line).	Removed space between bullet items for list of CE contingency procedures.
51	ES-3.3, Page 11 of 17 Line 18 ES-1.2, Page 6 of 6, lines 5-6	A scenario should be designed to run approximately 60 to 90 minutes. 11. The operating test for initial licensing will normally consist of two or three scenarios each lasting approximately 1.5 to 2 hours. The scenarios should run 45-60 minutes with a requal crew during validation and should run 45-90 minutes for the ILO students.	Recommend changing ES-1.2 to align with ES-3.3.	Changed ES 1.2 page 6 of 6 to 1 -1.5 hours per scenario for initial licensing examinations.
52	ES-3.3, step 5, page 10 of 17	Recent changes to the BWR Owners Group guidelines have changed the setup on some contingency procedures. Specifically, "Alternate Level Control" is no longer a separate contingency procedure and has been added to the "RPV Control" EOP. It is still an EOP contingency path/procedure and should be treated as such.	Consider adding statement that the identified contingency procedures need not be standalone EOPs and may be included in the base EOPs.	Added the following Note: Because of the General Electric BWR EOP structure, these may not be stand-alone procedures.

53	<p>ES-3.3, step k, Page 11 of 17 (line 45) ES 3.6, page 4 of 27 (line 43) Table 3.6-1, page 6 of 27</p>	<p>Raising the grading threshold (i.e., making it harder for an applicant to pass) should be limited to closing gaps with licensing applicants that were determined to not display the minimum requirements necessary to be licensed as competent licensed operators. There is no evidence that the current grading criteria is inadequate to license competent applicants and the change was made as one of the actions to improve grading clarity and consistency. Many of the other changes, including the new SPD category will help improve grading clarity and consistency without the need for increasing the significance to automatic failure for a missed CT or CPD. The industry also performed a study of a smaller population and determined that there will be increased failures of licensed operator candidates during the simulator operating examination.</p>	<p>Recommend maintaining a missed CT or CPD as a 3-point deduction.</p>	<p>The NRC reconsidered the grading of CPDs based on industry feedback and a CPD has been returned to a 3-point deduction; two or more CPDs will result in a failure of the simulator operating test regardless of the calculated competency area scores.</p>
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53 continued		<p>Additionally, the elimination of a broad category of items contained in Rev. 11 that can constitute a critical task (e.g., scrams) while maintaining the requirement of at least 2 preidentified critical tasks will potentially make scenarios longer, more complex and increase difficulty due to the need to make CTs EOP based similar to Rev. 10. Because the studies conducted by the LOFG and NRC staff used previously graded exams as the subject matter, the potential consequences of this change could not be assessed. These losses of competent operators from talent pipelines will negatively impact organizational staffing and no clear safety issue exists to warrant the NRC's imposition of this burden.</p>	<p>Recommend maintaining a missed CT or CPD as a 3-point deduction.</p>	<p>The NRC reconsidered the grading of CPDs based on industry feedback and a CPD has been returned to a 3-point deduction; two or more CPDs will result in a failure of the simulator operating test regardless of the calculated competency area scores. The CT criteria in Rev 12 will not make the scenarios longer. The concern with having one CT per scenario means that some applicants might not receive a CT. The NRC chief examiner has the ability to control the scenarios if they are getting too long or complex. The majority of Revision 11 CTs should still be usable. The major change to the CT methodology was removing unintentional reactor protection system (RPS) or ESF actuations from the list of what qualifies as a post-scenario CT.</p>
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54	ES-3.3, page 12/13 of 17 (line 38)	<p>Critical Task Methodology Step C.1 is "Identifying Scenario-Specific Critical Tasks" directs scenario developers to apply guidance to IDENTIFY and DESIGNATE CTs. The list of items provided mainly describe applicant actions...what applicants must do or not do when responding to plant conditions to satisfactorily address the CT. When developing CTs, the author can only know what actions the applicants SHOULD take, based on the procedural guidance and projected plant response. The author CANNOT know, at this point in the process, what actions the applicants WILL take when they perform the scenario. The list of bullets on page 13 appear to be a description of how to determine if a post- scenario CT has been created. Rev. 11 CT methodology describes how to determine whether a proposed malfunction is a safety-significant CT.</p>	<p>Proposed Replacement Language for Page 13 of ES-3.3: The developer should apply the following guidance to identify and designate CTs in conjunction with facility CT lists or in the absence of such a list:</p> <p>Do conditions exist which represent significant safety challenges? Examples include the following:</p> <ul style="list-style-type: none"> ☐ Conditions that warrant initiation of emergency depressurizations (BWR) ☐ Conditions requiring orange or red path CSF response (W and AP1000) ☐ Conditions that warrant performance of FRG transition (CE) ☐ Conditions that warrant declaration of SAE or GE <p>Conditions which are beyond the control of the crew or which are irreparably introduced by the scenario should not be designated as CTs.</p>	<p>The NRC agrees with the commenter that the instructions for identifying critical tasks were written in terms of applicant actions and not useful for selecting critical tasks during scenario development. The NRC made changes to ES 3.3 Critical Task Methodology instructions for identifying critical tasks that are "task orientated," for example: "actions that directly lead to the restoration of one or more safety functions" and "EOP-directed actions that are essential to an event's overall mitigative strategy."</p>
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55	ES-3.3 A.4, Page 3 of 17 (line 12-16)	This requires simulator guides to include both the procedure steps and the verifiable actions that the applicants are expected to take. For example, instead of only stating, "The BOP starts emergency diesel generator A in accordance with Procedure XYZ, Steps 1.10–1.25," reference the procedure steps and include verifiable actions for that set of procedure steps that the BOP is expected to perform. This requirement could be interpreted to require separate clarification of verifiable steps when step performance inherently contains verifiable actions. Adding a separate clarification to identify and specify which activities are "verifiable actions" may make the evaluation tool unwieldy and confusing.	Consider adding clarification to paragraph that states, "If a procedure step describes the verifiable actions, including the step description alone would satisfy this requirement."	Change was made for clarity. The intent is that the Scenario Guide or Form 3.3-2 contains the verifiable actions and not only procedure step numbers because this provides clear objective grading criteria for grading purposes. There was no change to the Rev 11 requirement in Appendix D to "include every required operator action."
56	ES-3.3 A.4, Page 3 of 17 (line 31-32)	This requires simulator guides to identify and document events that impact TS functions (such as for inoperable instruments). This requirement is reasonable prior to a major transient. For example, a design basis accident and resulting emergency procedure directed actions may result in impact to TS functions but evaluating this impact to TS is less important to safety than appropriate accident response procedure implementation.	Consider clarifying requirement to state, "At a minimum, identify and document those events that impact TS functions (such as for inoperable instruments) prior to major transients."	Added "prior to major transient."

57	ES-3.3 page 12 of 17 (line 2)	This does not seem to fit the concept of "risk informed."		Deleted the sentence in question because it was redundant to the first sentence in the paragraph.
58	ES-3.4 A, Page 1 of 9 (line 22-30)	R12 ES-3.4 A. contains guidance for developing simulator scenarios while limiting overlap. R11 ES-301 D.5.b recognized that because of a limited number of methods for adding reactivity, reactivity manipulation events would be exempt from prescribed overlap limits. This allowance was not included in R12.	Consider adding this clarification.	No change was made because ES 3.4 A states: Because of a limited number of methods for adding reactivity, reactivity manipulation events can be repeated from past examinations.
59	ES-3.4 page 2 of 9 (line 35)	Segregating the steps for completing the outline (Form ES 3.3-1) from the steps of completing the scenario guides (From ES 3.3-2), into separate sections would better describe the process of developing a Simulator Scenario and clearly identify which elements are part of the outline development and which are part of the scenario guide development.	Consider separating the steps for completing the outline from the steps of completing scenario guides.	Change made in accordance with the recommendation.

60	ES-3.4 A, Page 2 of 9 (line 18-20)	<p>The additional limitation that the scenario should not duplicate operator tasks that appear on the JPM portion of the operating test or <i>the written examination</i> unless the operator actions for the same task are different for the related simulator event. Since JPMs and simulator scenarios evaluate skill performance, this restriction is warranted to prevent duplication. However, written examinations evaluate knowledge that may apply to numerous normal and abnormal tasks. Evaluating all written examination questions to eliminate potential overlap for the skill portion of examinations will be subjective and time consuming. In addition, knowing how a task should be performed and performing actions are inherently two different evaluations.</p>	Consider revising limitation to exclude consideration of the written examination.	No change was made. This instruction existed in Rev 11, on Form ES-301-3, to check for overlap with the entire exam, therefore this is not a new requirement. One concern is that applicants could be penalized more than once for knowledge or performance deficiencies for the same topic/task.
61	ES-3.4, Page 3 of 9, Section 2	<p>Information about the use of surrogates should be in the standard on administration (ES 3.5 Section D). Scenarios are not designed around the use of surrogates, unless the scenario will be used only with a set of crews that will use a surrogate in the same position for all iterations of the scenario administration. If kept here, this should not be listed as a separate step in the "development process." It seems to be more appropriate to list this as a sub-topic to item 1 (Determining the number of scenarios).</p>	Determine if this section should be kept in this location or a sub-topic to item 1.	The steps for surrogate operators have been moved to a separate Subsection B: Determining the Number of Scenarios to Develop and Use of Surrogate Operators.

62	ES-3.4, page 3 of 9 (line 5)	The example on line 5 could more clearly show the benefit of the application of the requirement on determining the number of scenarios required based on crew composition.	Recommend adding the following example: If a watch team has two SRO-I's with one RO, both SRO-I's would not need to be ATC requiring 3 scenarios. You could complete all requirements with two scenarios, eliminating requirement for 3 rd scenario	The examples in this section have been revised based on this comment.
63	ES-3.4, Page 4 of 9 (line 28-30)	R12 Table 3.4-2 Events and Evolutions for License Level includes minimum number of events or evolutions for each type of license and now requires Manual Control of Automatic Action for RO and SRO-I positions during the simulator examination. This requirement does not contain any clarification on what constitutes manual control of an automatic function. For example, does taking manual control of an automatic secondary side feedwater heater drain valve satisfy this requirement?	Consider clarifying any restrictions for crediting manual control of automatic function or provide examples.	Added that manual control of automatic function event must include verifiable actions. Also added: d. Manual control of an automatic function can be for a safety or a non-safety related system that has both an automatic and a manual control feature; the control feature is not limited to component controllers. For example, the event involves the failure of the automatic-start feature of a pump and the applicant has to manually start that pump. The event must involve the applicant manually, with verifiable actions, taking control of the automatic function. For example, verification that a digital-controller auctioneered out a bad input would not be considered a verifiable action for this event.

64	ES-3.4, page 1 of 9 (line 9)	This paragraph uses the term “examination developers.” Other text uses “examination authors” and “examination writers.” For consistency and clarity, using a common term is suggested.	Recommend using “examination authors” throughout.	ES 3.2, 3.3 and ES 3.4 revised to use "examination author" consistently instead of scenario/exam developer or scenario author.
65	ES-3.4, page 1 of 9 (line 39)	Bullet 3 regarding “Scenarios extracted...” should be deleted since this requirement is encompassed in bullet 2.	Consider deleting bullet 3 or combine with bullet 2.	Change made to clarify that this is required (as it was in Rev 11) and therefore was added to the instructions for significantly modifying bank scenarios in Rev 12.
66	ES-3.4, page 2 of 9 (line 18-20)	The bullet states; “The scenario should not duplicate operator tasks that appear on the JPM portion of the operating test or on the <u>written examination</u> unless the operator actions for the same task are different for the related simulator event.” Also see sections; ES-3.1 page 2 & ES-2, page 15, step 3 on form 3.2-2. Scenarios and written exams are performed in different contexts and are separated in time. As currently written, this could cause a significant level of increased effort to cross-check thirty to fifty (or more) scenario elements against 100 written exam questions with very little benefit, and risk to examination quality. As discussed at the recent public meeting held on Oct 21, 2021, it appears that the intent of this requirement is for tasks that result in actions taken when due to malfunctions.	Recommend removing “written examination” check or add flexibility similar to Rev. 11 that had “ within acceptable limits. ” Consider wording such as; “Efforts should be taken to minimize tasks that are the same on the both the operating test and written examination.” Also, consider specifically calling out that this is intended for tasks associated with malfunctions.	This is not a new requirement. Clarification was added by revising the bullet in ES 3.4 to state the following: <ul style="list-style-type: none"> •The operator actions for the scenario events/evolutions should differ from operator tasks that appear on the JPM portion of the operating test or on the written examination.

67	ES-3.4, page 3 of 9 (line 2)	ES-3.4, B.1, third bullet conflicts somewhat with the example immediately after. Third bullet says SRO-I needs to be evaluated in either the BOP -OR- ATC position. There are no conditions similar to the 301-5 in Rev. 11 (Form 3.4-1 in Rev. 12). The example immediately after seems to specify ATC position since "lead operator" was defined as the ATC in the bullet before.	The example after the third bullet should say "... while the SRO-I applicant is in a reactor operator position."	Example changed to say: For example, a crew consisting of two ROs and one SRO-I will normally require three scenarios to evaluate each applicant's performance on the primary plant component controls; however, a surrogate SRO may have to fill the supervisory role while the SRO-I applicant is in the ATC/BOP position.
68	ES-3.4, page 3 of 9 (lines 25-29)	This is essentially that same as, and redundant to, what is on page 2, lines 22- 26.	Eliminate redundancy.	Change made in accordance with the recommendation.
69	ES-3.4, page 3 of 9 (lines 31-33)	Regarding use of surrogates...regional management should have the authority to permit the use of surrogates in order to streamline performance of the operating test without NRR involvement. This would increase efficiency.	Eliminate need to consult with NRR on use of surrogates to streamline performance of the operating test. Recommend replacement with regional branch chief concurrence.	No change. NRR operator licensing program tracks this type of information. It should not take long to get concurrence nor impact the exam administration schedule.

70	ES-3.4, page 4 of 9, Table 3.4-1	<p>Rev 12 leaves only EOP-Based CTs available to meet the “at least 2” criteria. Maintaining the requirement to have 2 CTs per scenario while removing a large batch of what constitutes a CT will make scenarios potentially longer and more complicated. In addition, considering a CT failure will result in a critical performance deficiency (CPD) and an automatic failure of the operating exam, existing CTs that are not commensurate with a penalty of this severity will likely not be applied in future initial licensing examinations. For example, at some BWR stations, inserting a manual scram on a 2nd control rod drift is categorized as a critical task. The “safety significance” is avoiding potential fuel damage due to an unanalyzed control rod pattern. This seems likely to be omitted as a CT on Rev. 12 based exams due to the severe penalty not aligning with the safety significance (i.e., “potential” fuel damage).</p>	<p>Recommend changing CT criteria to “at least 1” (versus 2) per scenario since the population of events in a typical scenario that can result in a critical task have been reduced. Additionally, limiting the maximum number of CTs to 2 would reduce the likelihood of having scenarios that are too long or complex and may help in consistency during scenario development.</p>	<p>No change was made. The CT criteria in Rev 12 will not make the scenarios longer. The concern with having one CT per scenario means that some applicants might not receive a CT. The NRC chief examiner has the ability to control the scenarios if they are getting too long or complex. The majority of Revision 11 CTs should still be usable. The major change to the CT methodology was removing unintentional reactor protection system (RPS) or ESF actuations from the list of what qualifies as a post-scenario CT.</p>
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71	ES-3.4, page 4 of 9, Table 3.4-1 (line 3)	There is no definition as to what constitutes a “scenario set” as it applies to contingency EOPs. The requirement is for one contingency EOP per scenario set, but there’s nothing that clarifies if that means each operator must be evaluated with a scenario that contains a contingency EOP.	Recommend adding a statement identifying a “scenario set” means the scenarios the individual operator will see and not the set of scenarios selected for the overall class.	No change was made. Scenario set is defined in ES-8. The Rev 12 requirement is: One EOP contingency required per scenario set, not one EOP contingency per scenario nor per applicant. These are targets but a scenario may also be acceptable without meeting all of the target numbers. This is also for examination security to prevent applicants from "expecting" an EOP contingency procedure.
72	ES-3.4, page 4 of 9, Table 3.4-2	Having at least 1 “Manual Control of Automatic Function” event for RO and SRO-I applicants represents a new requirement as compared to Rev. 11. There would be benefit to including additional guidance on what falls into this category.	Add additional guidance on what qualifies as “manual control of an automatic function.” For example, does placing the backup EHC pressure regulator in service qualify?	This is not a new requirement for Rev 12, instead an existing Rev 11 element of scenarios (from the RO competency checklist) that has been relocated to the list of events and evolutions for each applicant (see ES 301 page 16 of 33). Additional guidance has been added for this item (see Disposition for comment #63).
73	ES-3.4, page 5 of 9 (lines 38-40)	The last sentence in this paragraph states the ODCM cannot be used to meet the minimum TS evaluation requirement. Can the TRM be used to meet the minimum TS evaluation requirement?	Clarify whether the TRM can be used to meet minimum TS evaluation requirements.	No change was made. Clarification is already provided in the glossary definition of TS which includes TRM.
74	ES-3.5, Page 1 of 13 (line 40) Page 11 of 13 (lines 21 and 33) Page 12 of 13 (lines 43 and 46)	The term “error” is used in several cases in ES-3.5. Should “performance deficiency” be used instead?	Clarify/modify as necessary.	Revised ES-3.5 to replace the term 'error" with "performance deficiency."

75	ES-3.5, page 1 of 13 (line 29)	The last sentence in section A.2 is missing some words. It should probably state " <u>Obtain</u> concurrence from the NRR operator licensing program office <u>if</u> more than 30 days will elapse between the completion of one and the start of the other."	Modify as necessary by adding "obtain" and "if" to the sentence as highlighted.	Changed made in accordance with the recommendation.
76	ES-3.5, page 2 of 13 (line 1)	This statement seems to be unnecessary since it is okay to do it either way. Additionally, the exception to the examiner of record administering each JPM to their assigned applicant is addressed in Part H (Specific instructions for administering JPMs).	Consider removing this statement.	Deleted step 4 on page 1 of 13.
77	ES-3.5, page 2 of 13 (lines 13-15)	This should be included in the development/review process and not here.	Consider placing in the development/review process.	Moved step 7 to check simulator differences/deficiencies from ES 3.5 to ES 2.3 for the NRC chief examiner to check during op test review.
78	ES-3.5 A.9, Page 2 of 13 (line 27-29)	R12 ES-3.5 A.9 prevents the facility licensee from audio or video recording the operating test. Video recordings do not necessarily require additional observers to obtain the recording and recordings can be controlled to satisfy examination security requirements.	Consider removing this restriction.	No change was made. The NRC does not have a clear process for how to use video-taped scenarios after examination administration. Additionally, states have different laws for allowing video-taping so this may not be implemented consistently across the regions.
79	ES-3.5, page 2 of 13 (line 35)	This wording would imply that only the Chief Examiner administers the op-test. This should probably read: "Ensure that each applicant identified on Form 2.2-1, "List of Applicants," is administered the applicable portions operating test specified on the form." Consider combining with item 13 listed below.	Consider combining with item 13.	Merged this statement number 11 with statement number 13.

80	ES-3.5, page 3 of 13 (line 2)	This needs to be more specific as to what materials this sentence refers to.	Consider making this statement more specific.	No change was made. This is material that supports the licensing decision. MD 3.53 has more information on recording keeping.
81	ES-3.5, page 3 of 13 (lines 13-16)	This should be moved to the next section as it applies to all examiners.	Consider moving to the next section	Change made in accordance with the recommendation.
82	ES-3.5, step 7, page 4 of 13 (line 24)	Grammar/typo—remove “that” “An applicant may request <u>that</u> the administration of his or her operating test without 24 extraneous observers.”	Remove “that” from item #7.	Change made in accordance with the recommendation.
83	ES-3.5, page 4 of 13 (line 29)	Move the content of ES 3.4 Section B.2 to this standard.	Consider moving content of ES 3.4 Section B.2.	No change was made. This information is important to remain in ES 3.4 when planning how many scenarios to develop.
84	ES-3.5, page 9 of 13 (line 20)	Grammar/typo in section 16.a – “perform” should be “performed” “Verify that each examiner observed that his or her applicant <u>perform</u> the required 20 number of transients and events to allow adequate evaluation of all required 21 competencies.”	Change “perform” to “performed”.	Change made in accordance with the recommendation.
85	ES-3.5, page 9 of 13 (line 42-44) ES-3.6, page 5 of 28 (lines 12-13)	This states an SPD exists if an avoidable emergency action level entry or escalation is reached. An error resulting in EAL entry or escalation at the Unusual Event level does not require staffing the emergency response centers or have increased safety consequences.	Consider a threshold of ALERT or higher for meeting the criteria of an SPD.	The NRC agrees with the comment and has changed the threshold for SPDs to entry/escalation to an Alert or higher but less than the CPD criteria. Change made in ES 3.5 and ES 3.6 for SPD.

86	<p>ES-3.5, page 9 of 13 (line 32-40)</p> <p>ES-3.6, page 5 of 38 (lines 5-10)</p>	<p>The note states that subsequent RPS/ESF actuations that do not alter equipment alignments are not treated as additional significant performance deficiencies. Other examples that shouldn't be considered an SPD would be single channel actuations or half scrams. These would not alter equipment alignments or only open reactor trip breakers that would not result in an automatic scram.</p>	<p>Consider revising current note or add an additional note that single channel actuations or "half scrams" should not be considered an SPD.</p>	<p>Added note for this part of ES 3.5 for Single channel RPS/ESFAS actuation.</p>
87	<p>ES-3.5, page 9 of 13 (line 46-47)</p> <p>ES-3.6, page 5 of 38 (lines 15-16)</p>	<p>This states an SPD exists if performance deficiencies result in an unplanned power change of more than 10 percent rated thermal power. The intent is that the SPD is due to inadequate power control. At times unit supervisors could direct reducing or controlling power at a lower power level due to conservative decision making. Conservatism is an operator fundamental that is strongly reinforced by the utility training programs.</p>	<p>Consider adding a statement that placing the plant at a lower power level as a result of conservative decision making would not apply to this criterion.</p>	<p>Added note for this part of ES 3.5/ES 3.6 for unplanned power changes.</p>

88	ES-3.5, step 17, page 10 of 13 (lines 14-18)	As written, step 17 may cause confusion. "If a simulator scenario includes emergency plan event classification, because the simulator operating tests for the initial licensing examination are conducted with only one applicant in the SRO position, the NRC does not require the SRO applicant to complete an emergency classification within the normal event classification period of time. The scenario does not need to include event classification."	To add clarity, consider modifying with the following wording; "Since the simulator operating tests for the initial licensing examination are conducted with only one applicant in the SRO position, the NRC does not require the SRO applicant to complete an emergency classification within the normal event classification period of time. The scenario does not need to include event classification."	Change made in accordance with the recommendation.
89	ES-3.5, page 11 of 13 (line 15)	This is something that should be part of the ES 1.2 briefing not here. This is something the applicant should do without be prompted or encouraged during the exam administration.	Consider removing from this section.	Step has been revised as follows: deleted the statement about the examiner encouraging the applicant to use reference material since this is contained in ES 1.2.

90	ES-3.6, Section B.4.a	<p>The discussion on Critical Performance Deficiencies, states that a significant performance deficiency (SPD) includes performance deficiencies (PDs) resulting in unplanned power changes of more than 10-percent rated thermal power. This seems to indicate that acting in a conservative manner to reduce the energy state of the reactor could result in a SPD. Is this the intent of the statement? The statement seems to be open for a wide variation in interpretation.</p>	<p>Provide clarification on the intent of this statement.</p>	<p>In ES 3.5 and ES 3.6, a note was added that placing the plant at a lower power level as a result of conservative decision making would not be a SPD (see comment # 87).</p>
91	ES-3.6, throughout	<p>“PD” and “PDs” are used throughout this section, as is “performance deficiency.” CPD and SPD are included in the Abbreviations and Acronyms section, but PD is not.</p>	<p>Add PD to Abbreviations and Acronyms for consistency.</p>	<p>Change made in accordance with the recommendation.</p>

92	ES-3.6, page 4 of 27 (lines 35-40)	<p>This paragraph introduces grading subjectivity, especially if the critical task was met/completed. PDs such as procedure usage or place keeping errors or intervention by other crew members may be graded as a CPD. In many cases, there may be no way to determine if the applicant would have caught and corrected the error in a reasonable amount of time during the scenario. While we recognize that there will be a level of judgement by the examiner when evaluating a performance deficiency in this area, this will likely lead to additional candidate appeals if a CPD is assigned, resulting in automatic simulator examination failure even if the associated CT itself was completed. There may have been an opportunity for the candidate to self-identify and correct the error without the intervention but control room teams are trained and expected to immediately coach and correct behaviors when standards are not being met or errors are identified. Additionally, this change may result in less challenge between control room team members.</p>	<p>Consider the following recommendations to this area to reduce subjectivity to benefit examiners and to account for the increased safety significance.</p> <p>A PD associated with performance of actions in support of completing a CT requiring intervention by other crew members to complete the CT would be an SPD if the applicant would not have been able to identify and correct the error in a timely manner (i.e., before the CT would be unrecoverable).</p>	<p>No change was made as the recommendation creates a more complicated grading rubric. The NRC evaluates the individual performance of applicants. Regarding the concern that applicants may be less willing to coach or assist one another has implications for the performance evaluation of the other crew members.</p>
93	ES-3.6, page 5 of 27 (line 12)	<p>This should be clarified to indicate applicability to entry/escalation not involving loss of multiple fission product barriers (which would be a CPD)</p>	<p>Consider adding clarification.</p>	<p>Added statement for SPD criterion to distinguish from CPD criteria.</p>

94	ES-3.6 Page 6 of 27 (line 16) Page 8 of 27 (line 6) Page 9 of 27 (lines 6 and 9)	The term “error” is used in several cases in ES-3.6. Should “PD” or “Performance deficiency” be used instead? Or in some cases, “error” can be eliminated from the sentence.	Clarify/modify the use of “error” as desired and remove the word “for” on page 6, line 16.	Change made in accordance with the recommendation.
95	ES-3.6, page 6 of 27 (line 17)	CPDs should not be assigned to “understanding” RFs. The applicant needs to demonstrate the inability to take CT-level safety-significant actions to result in a CPD. Should not be based on failing to provide a correct answer to a follow- up question.	Recommend not allowing CPDs to be assigned to “understanding” RFs.	<p>No change was made. Follow-up questions must be tied to an observed PD so this is not a stand-alone situation. The CPD/SPD criteria is for observed performance not follow-up questions. See ES 3.5 E Instructions for Use of Followup questions. A CPD would not be assigned based on applicant response to a follow-up question only. That would not meet the CT methodology in ES 3.3</p> <p>The following are examples of performance standards that cannot be measured objectively during a simulator scenario and, therefore, are not suitable for CT performance standards:</p> <ul style="list-style-type: none"> •understanding (such as an applicant must understand the significance of a certain plant response) •observing that an expected response has occurred •observing the performance of a system

96	ES-3.6, page 8 (line 26)	The “departure from nucleate boiling” TS example provided is PWR specific. May be beneficial to use an example that applies more generically to other reactor types.	Consider using a TS example that is applicable to all reactor technologies.	Example was added for BWR plants in ES 3.6.
97	ES-3.6, page 8, 9	With only three RF points to work with, the allowance to assign multiple PDs for each TS in a single event is not proportional. Each TS event should be limited to one PD normally.	Consider simplifying and adjusting grading criteria described in this section.	No change was made. The instructions state, "Every missed TS entry represents a PD, except for missed TS entries that fall under RF 6.a, which are limited to one PD per TS event." PDs in TS space can also be assigned to other Competency areas. TS events are treated like all other events in that there may be more than one opportunity for a PDs in each event. If TS were graded with one PD per TS event, then there would be a situation where some applicants may never get more than two opportunities to make a PD and therefore could not be graded lower than 2 on TS competency. Another control in place is that no error is carried forward for individual TS events.
98	ES-3.6, page 10 (line 35)	The assignments of CPDs (or even SPDs) in Communications seems excessive. All communications errors should be assessed as a PD after the first one. This may make grading simpler and more consistent.	Consider simplifying communications competency RFs.	The change was made so all communication PDs will be graded using the Rev 11 criteria for communication PDs.

99	ES-3.7 Page 1 of 1	The current exemptions for the AP1000 provides a condition when the alternative compliance measures end - when the site 10 CFR 52.103(g) finding is issued. It also allows for using actual plant equipment for in-plant JPMs as it becomes available during the construction phase.	Recommend adding both of these items to this section.	Added additional information about using alternative JPMS. The allowance to use actual plant equipment already exists through the "normal" JPM instructions in ES 3.2.
100	ES-3.7, page 1 (line 21)	Step A.4 – a period is missing from the end of the sentence.	Add period.	Change made in accordance with the recommendation.
Section 4, Written Examinations				
101	ES-4.2 B.3, Page 3 of 29 (line 19-22)	In R11 ES-401 D.2.a, deviations from the previously approved examination outline required a discussion of the proposed deviation with the NRC chief examiner to obtain replacement K/As (if needed). R12 ES-4.2 B.3 provides examples of when deviations may be required and seems to require documentation only.	Confirm that discussion with the NRC chief examiner is no longer required to deviate from the examination outline.	The following change was made to ES 2.1 to clarify that NRC chief examiner permission is still required to deviate from the approved outline: Any time it becomes necessary to deviate from the previously approved written examination outline, contact the NRC chief examiner for concurrence on the need to deviate and request a replacement K/A. The NRC chief examiner will randomly select and provide a replacement K/A. The examination author must document the eliminated K/A statements on Form 4.1-1, or equivalent, with an explanation of why the K/A was rejected. Also added to kick-off call list of topics (ES 2.1) for the NRC chief examiner and the licensee point of contact to discuss expectations for deviating from the approved written examination outline and selecting replace K/As.

102	ES-4.2 B.4, Page 3 of 29 (line 24-25)	R11 ES-205 D clarifies that questions used on the GFE shall conform to the applicable construction and style guidelines in Appendix B. The examination shall include 40 questions taken directly from the NRC’s GFE question bank for the applicable vendor type, 5 questions that are derived from existing bank questions by making one or more significant modifications, and 5 questions that are newly developed. ES-4.2 B.4 contains generic requirements for examination question selection from examination banks. It is not clear what rules will apply to Theory question development under R12.	Consider clarifying ES-4.2 B.4 by modifying the following statement, “This definition includes NRC examination questions used at other facility licensee sites <i>and the NRC’s GFE question bank</i> .”	The following change was made: Added clarification for GFE exam bank in ES 4.2. This definition includes NRC Generic Fundamentals Examination (GFE) bank questions and NRC examination questions used at other facility licensee sites.
103	ES-4.3, Page 3 of 6 (line 1), page 5 of 6 (line 111), and ES-4.4, page 3 of 6 (line 22)	What is the purpose or value of developing and providing a seating chart. I have never had a need or reason to look at the seating chart following the exam nor is it required to be retained.	Consider evaluating the need for providing a seating chart.	No change was made. This change is outside the scope of this revision.
104	ES-4.4, C, 3, g Page 5 of 6, Line 31	There appears to be a missing section header between item f. and item g. In revision 11 the header is “Grade the Examinations”.	Recommend adding “Grade the Examination” as item 4, and renumber subsequent steps.	No change was made. For Rev 12, wording changed from "grading" to "review of grading" because usually the facility licensee grades the written examination in accordance with 55.40(b) <i>Power reactor facility licensees may prepare, proctor, and grade the written examinations required by §§ 55.41 and 55.43.</i>

Section 5, Post-Examination Activities and Other Licensing Actions

105	ES-5.1, Page 1 of 20, Line 16 and 17	The proposed changes to ES-3.6 now defines critical performance deficiencies and significant performance deficiencies, so the previous examples of deviations from nominal grading practices may no longer be accurate.	Recommend deleting “a simulator failure based on a single error with serious safety consequences or” from this parenthetical.	No change made. The grading criteria for CPDs was changed following public comment period.
106	ES-5.1, D, 3 page 5 of 20, Line 2	Missing close of quotation at the end of “Sample Pass Letter.	Recommend adding closing quotation mark following the word “Letter.”	Change made in accordance with the comment.
107	ES-5.1, D, 3 Page 5 of 20, Line 11	During the cold license phase the time between receiving a Pass Letter and completing all the elements of 10 CFR 55.31 was prolonged, so candidates were enrolled in a SAT based continuing training program while completing the items.	Recommend adding a discussion about how a Pass Letter could be used during cold license phase. Additionally, add a requirement for those candidates to enter a SAT based continuing training program if that is appropriate.	No change was made. The NRC has proposed to add a requirement for applicants to participate in a SAT-based continuing training program in situations described by the commenter. The proposed changes are described in Regulatory Basis for Public Comment (ML20149K680), Appendix E. Proposed changes to NUREG-1021 that would be made if the rule is implemented, including changes to the pass letter template if determined to be necessary, will be available to the public for comment when the proposed rule is issued for public comment

108	ES-5.3, A, 1, b Page 2 of 12, Line 14	If cold license phase candidates with Pass Letters are enrolled in a SAT based continuing training program that is based on a typical license operator requalification training program, the first class are likely to be in this program for two years. Clearly state when the requirement to begin requalification exams begins, from the entry of the first class into this program or from the issuance of the first licenses.	Recommend clearly stating that the requirement to begin requalification exams begins from the issuance of the first licenses.	No change was made. Making this recommended change in Rev 12 may contradict future rule language for this issue (See comment #107). The NRC staff is considering updating guidance on this issue in NUREG-1021 as part of the Parts 50 and 52 rulemaking.
Section 6, Requalification Examinations				
109	ES-6.1, step 5, page 8 of 33 (line 21)	“postexamination” should be hyphenated.	Change “postexamination” to “post- examination”	Change made in accordance with the recommendation.
110	ES-6.1, H.2.c and d, Page 14 of 33	Regarding first and second retakes, the document does not specify whether a second retake is required following passing the first retake. Note that this is not a change from ES-605 (page 13), and it implies a second retake isn’t necessary following passing of the first, but may be added in the interest of clarity.	Consider adding a statement that a second retake does not apply following successful completion of the first retake.	The following change was made: Added clarification If the second (first retake) examination was failed, the NRC will normally administer a third (second retake) examination approximately 6 months after issuing the second failure.
111	ES-6.1, Page 15 of 33 (line 21)	Form 6.1-1 - Has no title description	Include form title.	Change made in accordance with the recommendation.
112	ES-6.1, Page 15 of 33 (line 46)	Form 6.1-6 - Has no title description	Include form title.	Change made in accordance with the recommendation.
113	Form 6.1-3, ES- 6.1 Page 20 of 33	“Preexamination” and “Postexamination” should be hyphenated.	Change “Preexamination” and “Postexamination” to “Pre-examination” and “Post-examination.”	Change made in accordance with the recommendation.

114	ES-6.1, Page 23 & 24 of 33	Under III. Quality, Exam Section goes from; "A. Sample Plan" to "C. Walkthrough" It appears that there should be another section for; "B. Written Exam"	Move the guidance for written exam quality from revision 11 to revision 12.	Section B has been added from ES-601.
115	ES-6.1, Page 26 of 33	The page number shows 2 of 33 versus 26 of 33.	Correct the page number to 26 of 33.	Change made in accordance with the recommendation.
116	ES-6.1, Form ES- 6.1-4, Page 21 of 33	The required minimum number of open-reference written exam items is 700 questions, 350 per section. During cold licensing and initial operating cycle for new construction plants a 700 question exam bank requires a significant amount of time and resources to accumulate. This is more difficult considering the higher likelihood of design changes during construction completion.	Recommend adding an allowance for new plants to submit the available questions in their bank.	This section is for NRC conducted requalification examinations only. This change for new reactors is outside the scope of Rev 12 objectives and will be considered in future revisions. As stated in ES 6.1, "The NRC will consider preferentially using the facility licensee's requalification examination structure or methodology if it is different from that described herein provided that it complies with 10 CFR 55.59, "Requalification," and is free of significant flaws."

<p>117</p>	<p>ES-6.1, Form ES- 6.1-4, Page 21 of 33</p>	<p>The required minimum number of job performance measures is 95, plus 10 per year following the initial requalification exam until the job task analysis is fully covered. The written exam bank and scenario exam bank have upper size limits. ES-6.3, B.1.d (on page 3 of 7 of ES-6.3) only requires a representative sample of JPM, and states that the NRC anticipates that bank will be approximately 125 to 150 JPMs. During cold licensing and initial operating cycle for new construction plants a 95 JPM bank requires a significant amount of time and resources to accumulate. This is more difficult considering the higher likelihood of design changes during construction completion, and further complicated by the use of alternative means described in Section 3.7 for cold license JPMs.</p>	<p>Recommend changing the required JPM bank size to match ES-6.3, of approximately 125 to 150 JPMs. Also recommend adding an allowance for new plants to submit their available JPM bank at submittal time.</p>	<p>This section is for NRC conducted requalification examinations only. This change for new reactors is outside the scope of Rev 12 objectives and will be considered in future revisions. As stated in ES 6.1, "The NRC will consider preferentially using the facility licensee's requalification examination structure or methodology if it is different from that described herein provided that it complies with 10 CFR 55.59, "Requalification," and is free of significant flaws."</p>
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<p>118</p>	<p>ES-6.2, A, Page 1 of 24 Lines 13 thru 21</p>	<p>This section discusses that the “Plant and Control Systems” section of the exam (section A) is administered using a static simulator. There is an entry about this in the NRC Operator Licensing Program Feedback page. It acknowledges that this exam style was developed by a working group in 1987, but that some licensees stopped using that format since the NRC shifted to an inspection-based oversight program in 1994. The entry allows that the NRC will consider using the facility licensee’s requalification examination structure or methodology if it is different, provided it complies with 10 CFR 55.59 and is free of significant flaws. Section 6.1, B, 2nd paragraph says that “[T]he NRC will consider preferentially using the facility licensee’s requalification examination structure or methodology if it differs from what is described here if it complies with 10 CFR 55.59 and is free of significant flaws”, but does not specifically discuss the use of static exam questions. It also requires the regional office to consult with NRR operator licensing program office prior to making this decision.</p>	<p>Incorporate the clarification provided in the Operator Licensing Program Feedback into ES-6.2 to improve the clarity and intent of this section: “As discussed in Section C of [ES-6.1], if a facility licensee’s requalification program uses an examination structure or methodology different from that described in the [ES-6] series and the NRC decides to conduct an examination, the NRC will consider preferentially using the facility licensee’s requalification examination structure or methodology if it is different from that described in the ES, provided it complies with 10 CFR 55.59 and is free of significant flaws.” State that the plant and control system section of the written exam is allowed to be tested in the same manner as the Administrative Controls/ Procedural Limits without prior approval.</p>	<p>No change made because this is outside the scope of this revision. Additionally, this statement exists in ES 6.1 and applies to ES 6.2 as well: The NRC conducted requalification examination normally consists of three parts, including a two section open reference written examination, a walkthrough evaluation, and a dynamic simulator evaluation. ES-6.2, ES 6.3, and ES 6.4 further describe the three examination parts. The NRC will consider preferentially using the facility licensee’s requalification examination structure or methodology if it differs from that described here, and if it complies with 10 CFR 55.59, “Requalification,” and is free of significant flaws. The regional office shall consult with the NRR operator licensing program office to determine the appropriate examination procedure.</p>
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119	ES-6.2, D, 1, d. Page 15 of 24 Line 39 thru 47	There is no clear direction for how digital/embedded electronic formatted procedures are addressed. During normal operation crew members routinely check Alarm Response Procedures or Critical Safety Function Status Tree indication, in addition to the other reference material available.	Recommend clearly stating that the normal access to the digital/embedded electronic format procedures should be provided.	No change made because this is outside the scope of this revision. Additionally, this statement exists in ES 6.1 and applies to ES 6.2 as well: The NRC conducted requalification examination normally consists of three parts, including a two section open reference written examination, a walkthrough evaluation, and a dynamic simulator evaluation. ES-6.2, ES 6.3, and ES 6.4 further describe the three examination parts. The NRC will consider preferentially using the facility licensee's requalification examination structure or methodology if it differs from that described here, and if it complies with 10 CFR 55.59, "Requalification," and is free of significant flaws. The regional office shall consult with the NRR operator licensing program office to determine the appropriate examination procedure.
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120	ES-6.2, D, 1, e. Page 16 of 24 Line 6	The list of plant procedures available as open reference material includes emergency operating procedures, abnormal operating procedures, and normal operating procedures, but does not include alarm response procedures.	Recommend adding alarm response procedures to this list.	No change made because this is outside the scope of this revision. Additionally, this statement exists in ES 6.1 and applies to ES 6.2 as well: The NRC conducted requalification examination normally consists of three parts, including a two section open reference written examination, a walkthrough evaluation, and a dynamic simulator evaluation. ES-6.2, ES 6.3, and ES 6.4 further describe the three examination parts. The NRC will consider preferentially using the facility licensee's requalification examination structure or methodology if it differs from that described here, and if it complies with 10 CFR 55.59, "Requalification," and is free of significant flaws. The regional office shall consult with the NRR operator licensing program office to determine the appropriate examination procedure.
121	ES-6.3, page 2 of 7 (line 3)	The sentence "systems that are the subject of NRC information notices" is a separate thought from the one above and should be a separate bullet.	Make sentence its own bullet.	Change made in accordance with the recommendation.

Section 8, Glossary				
122	ES-8, Glossary Page 6 of 7 Lines 20 thru 27	There is a definition for simulation facility, which includes bullets for a plant-referenced simulator and a commission- approved simulator. There is also a separate definition for a plant-referenced simulator, which includes how it is used in operator licensing.	Recommend adding a separate definition for a commission- approved simulator, which includes how it is used in operator licensing.	Added a pointer to 10 CFR 55.4, "Definitions" for PRS and simulation facility so that there is only one place for these definitions.
Appendix B, Examples of Written Examination Questions				
123	Appendix B	Tier 4 "Theory" is new to the written examination and previously used generic examples of reactor and thermodynamic theory questions may or may not be acceptable on final licensing examinations. There would be a benefit to developing examples to include.	Add examples of plant-specific, operationally valid theory questions to Appendix B to aid the facility Examination Authors in developing satisfactory operationally valid theory questions (refer to NEI letter on Generic Fundamentals Reintegration, Appendix 1, Recommendation 1, dated March 4, 2020 (ML20083F400).	No change was made. The NRC added some examples of Tier 4 questions to a general Operator Licensing Program Feedback item.
Other / Miscellaneous				
124	General Comment	Revision 12, <i>Several blank pages</i>	Recommend removing blank pages to reduce document size.	No change was made. Blank pages are required by NRC NUREG publishing procedures.