

SUNI Review  
Complete  
Template=ADM-013  
E-RIDS=ADM-03

# PUBLIC SUBMISSION

ADD: Maurin  
Scheetz, Christian  
Cowdrey, Mary Neely  
Comment (5)  
Publication  
Date:12/1/2020  
CITATION 85 FR  
77280

**As of:** 2/20/21 12:12 PM  
**Received:** February 12, 2021  
**Status:** Pending\_Post  
**Tracking No.** k12-k17w-a14u  
**Comments Due:** February 16, 2021  
**Submission Type:** Web

**Docket:** NRC-2020-0227

NUREG-1021, "Operator Licensing Examination Standards for Power Reactors"

**Comment On:** NRC-2020-0227-0001

Operator Licensing Examination Standards for Power Reactors

**Document:** NRC-2020-0227-DRAFT-0006

Comment on FR Doc # 2020-26460

---

## Submitter Information

**Name:** Andy Gardner

**Address:**

Bridgman, MI, 49127

**Email:** ajgardner@aep.com

**Phone:** 269-465-5901 x3088

---

## General Comment

Attached are the comments on behalf of D.C. Cook's Operations Training team.

---

## Attachments

Comments on NUREG-1021 Rev. 12

No.	Section	Comment/Basis	Recommendation
<b>Section 1, GENERAL</b>			
1	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 at all?	Confirm if NRC contact is required during written exam and ensure it is added back in the section if so intended.
2	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.
3	ES-1.2 step 7, page 2 of 6 (line 30)	States; "answers" will be documented vice questions from students Is the documentation of the question still required or only the answers provided?	Include questions and answers will be documented if that is the intent.
4	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.
<b>Section 2, INITIAL PREEXAMINATION ACTIVITIES</b>			
5	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.
6	ES-2.2, page 3 of 22 (starting on line 10)	References ACAD 10-001, Revision 1. Revised eligibility requirements are contained in ACAD 10-001, Revision 2, which will be released soon. 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.	Revise to reference ACAD 10-001, Revision 2 or make a general statement to reference the latest revision of the ACAD 10-001 since the NRC participates in the revision process per INPO guidance.
7	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".	Provide clarification if the added bullet results in new/additional requirements for alternate path JPMs.

No.	Section	Comment/Basis	Recommendation
		JPM cover sheets typically designate Alternate path. This information is also typically in the body of the JPM.	
<b>Section 3, INITIAL OPERATING TESTS</b>			
8	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 multiunit sites.	Consider combining the two steps into one step.
9	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.
10	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).
11	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 K/A that was associated with radiation work permits.	“Radiation work permits” should no longer be used as an example. Recommend replacement with a new example.
12	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.
13	ES-3.2, page 12 of 18 Form 3.2-1, step 3	“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.
14	ES-3.3, page 1 of 17 (lines 5, 6 and 22, 23)	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.	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.
15	ES-3.3, page 1 of 17 (lines 42 and 43)	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	Revise to state: “...the IC should be representative of a typical plant status, <b>which may include</b> various components, instruments, and annunciators out of service.”

No.	Section	Comment/Basis	Recommendation
16	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 events they 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" in the sentence to clarify the statement.
17	ES-3.3, page 5 of 17 (line 10)	The word "with" does not seem to belong in this sentence.	Remove "with" or revise to clarify intent.
18	ES-3.3, page 8 of 17 (starting at line 8)	This states a component/instrument failure that occurs before the major could be credited for actions before AND after the major 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 putting excess letdown actions are the same both before and after the major. 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?	Please provide a positive example of using this allowance.
19	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).
20	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.
21	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	All of these sections describe a missed CT or CPD as "UNSAT" or resulting in an automatic failure of the simulator operating test.  Previously, a missed CT or CPD resulted in a 3-point deduction versus an automatic failure. Additionally, a single error in any of the other portions of the NRC examination will not result in an automatic failure.  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	Recommend maintaining a missed CT or CPD as a 3-point deduction to avoid unnecessary elimination of competent operators from the licensed operator pipeline.

No.	Section	Comment/Basis	Recommendation
		<p>determined to not display the minimum requirements necessary to be licensed as competent licensed operators.</p> <p>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 resulting in a 2-point deduction for errors of higher significance in addition to increasing clarity around PD grading will help improve grading clarity and consistency without the need for increasing the significance to automatic failure for a missed CT or CPD.</p> <p>NRC evaluation of 417 previously examined licensed operator candidates graded with the proposed NUREG-1021, revision 12 grading criteria resulted in a 2.4% increase in failure rate (11 additional failures, 1 additional pass). Additionally, the elimination of a broad category of items contained in Rev 11 that can constitute a critical task will make scenarios longer, more complex and increase difficulty, which was not evaluated in the NRC evaluation and is expected to further increase the failure rate.</p> <p>The projected increase in failures will result in the loss of competent operators from the licensed operator pipeline impacting line organization staffing and unnecessary expense to the industry without a corresponding improvement in public safety.</p>	
22	ES-3.3, page 12 of 17 (line 38)	<p>Critical Task Methodology is described and discussed in this section. Step C.1 is "Identifying Scenario-Specific Critical Tasks" and directs scenario developers to apply guidance to IDENTIFY and DESIGNATE CTs. [emphasis added]</p> <p>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:</p> <p>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"> <li>• Conditions that warrant initiation of emergency depressurizations (BWR)</li> <li>• Conditions requiring orange or red path CSF response (W and AP1000)</li> </ul>

No.	Section	Comment/Basis	Recommendation
		Recommend replacing these bullets with similar content to Rev. 11 describing how to determine safety-significance and moving these bullets to the post-scenario CT discussion. The proposed guidance cannot be followed as written since the authors and examiners cannot know what actions an applicant may take in the future.	<ul style="list-style-type: none"> <li>• Conditions that warrant performance of FRG transition (CE)</li> <li>• Conditions that warrant declaration of SAE or GE</li> </ul> <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>
23	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.	Use “examination authors” throughout.
24	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.	Delete bullet 3.
25	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”.
26	ES-3.4, page 3 of 9 (line 19)	Scenarios and written exams are performed in different contexts and are separated in time. To exclude and cross-check thirty to fifty (or more) scenario elements against 100 written exam questions will be very time consuming and provide very little benefit in exam quality.	Remove written exam check.
27	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.
28	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. Some chief examiners are reluctant to contact NRR and therefore unnecessarily limit operating test 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.
29	ES-3.4, page 4 of 9, Table 3.4-1	Rev. 11 includes a broad category which will no longer be CTs per Rev. 12 criteria (failures which lead to trip conditions if not properly and promptly addressed). This 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	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.

No.	Section	Comment/Basis	Recommendation
		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 2 <sup>nd</sup> control rod drift is used 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).	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 in scenario development.
30	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.
31	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. It would be helpful to the industry for the NRC to specify any other new requirements in Rev. 12 (other than the obvious ones the industry and NRC have already discussed). This will help ensure the industry is fully aware of any new requirements when Rev. 12 is implemented and can conduct proper change management for corresponding station exam development procedures/processes.	Develop a list of new requirements and process changes being implemented in Rev. 12. Additional guidance on what qualifies as “manual control of an automatic function” may also be required. For example, does placing the backup EHC pressure regulator in service qualify?
32	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.
33	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.
34	ES-3.5, page 1 of 13 (line 29)	The last sentence in section A.2 is missing some words. It should probably state” (Obtain) concurrence from the NRR operator licensing program office (if) more than 30 days will elapse between the completion of one and the start of the other.	Modify as necessary.

No.	Section	Comment/Basis	Recommendation
35	ES-3.5, step 7, page 4 of 13 (line 24)	Grammar/typo—remove “that” from item #7.	Remove “that” from item #7.
36	ES-3.5, page 9 of 13 (line 20)	Grammar/typo in section 16.a – “perform” should be “performed”.	Change “perform” to “performed”.
37	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 for meeting the criteria of an SPD.
38	ES-3.5, page 9 of 13 (line 32-40) ES-3.6, page 5 of 38 (lines 5-10)	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.	Consider revising current note or add an additional note that single channel actuations or “half scrams” should not be considered an SPD.
39	ES-3.5, page 9 of 13 (line 46-47) ES-3.6, page 5 of 38 (lines 15-16)	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 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.	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.
40	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.”



No.	Section	Comment/Basis	Recommendation
41	ES-3.6, throughout	“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.	Add PD to Abbreviations and Acronyms for consistency.
42	ES-3.6, page 4 of 27 (lines 35-40)	<p>The paragraph states;</p> <p><i>“Applicants will be held accountable for CPDs corrected by other members of the control room team. If an applicant neglects to take an action or takes an incorrect action and is subsequently corrected by a team member, the examination team will determine the impact of that lack of action or incorrect action on the scenario as it relates to a CT. The measurable performance standard for this type of CT depends on the consequence of the applicant’s lack of action or incorrect action if the crew had not corrected it.”</i></p> <p>This 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.</p> <p>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 members of the operating crew.</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>
43	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.

No.	Section	Comment/Basis	Recommendation
44	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.
45	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.
46	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.
47	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.
48	ES-3.7, page 1 (line 21)	Step A.4 – a period is missing from the end of the sentence.	Add period.
<b>Section 4, INITIAL WRITTEN EXAMINATIONS</b>			
		None	
<b>Section 5, INITIAL POSTEXAMINATION ACTIVITIES AND OTHER LICENSING ACTIONS</b>			
		None	
<b>Section 6, NRC-CONDUCTED REQUALIFICATION EXAMINATIONS</b>			
49	ES-6.1, step 5, page 8 of 33 (line 21)	“postexamination” should be hyphenated.	Change “postexamination” to “post-examination”
50	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.	Consider adding a statement that a second retake does not apply following successful completion of the first retake.

No.	Section	Comment/Basis	Recommendation
		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.	
51	ES-6.1, Page 15 of 33 (line 21)	Form 6.1-1 - Has no title description	Include form title.
52	ES-6.1, Page 15 of 33 (line 46)	Form 6.1-6 - Has no title description	Include form title.
53	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".
54	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.
55	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.
56	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.
<b>Section 7, FUEL HANDLING EXAMINATIONS</b>			
		None	
<b>Section 8, GLOSSARY</b>			
		None	
<b>Appendix A: Overview of Generic Examination Concepts</b>			
		None	

No.	Section	Comment/Basis	Recommendation
<b>Appendix B Examples of Written Examination Questions</b>			
57	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 develop 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)).
<b>OTHER COMMENTS</b>			
58	General Comment	Revision 12 <i>Several blank pages</i>	Recommend removing blank pages to reduce document size.