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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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Subject: Comments Concerning Draft Revision 11 to NUREG 1021, "Operator Licensing Examination Standards for Power Reactors" (Federal Register 81FR6301, dated February 5, 2016, Docket ID NRC-2016-0006)

This letter is being submitted in response to the U.S. Nuclear Regulatory Commission's (NRC's) request for comments concerning draft Revision 11 to NUREG 1021, "Operator Licensing Examination Standards for Power Reactors," which was initially published in the *Federal Register* (i.e., 81FR6301, dated February 5, 2016) and subsequently noticed on April 6, 2016 (i.e., 81FR19998).

The draft NUREG provides NRC policy and guidance for the development, administration, and grading of examinations used for licensing operators at nuclear power plants under the NRC's regulations contained in 10 CFR 55, "Operator Licenses." This draft NUREG also provides guidance for maintaining operators' licenses, and for the NRC to conduct requalification examinations when necessary.

Exelon Generation Company, LLC (Exelon) appreciates the opportunity to comment on the subject draft NUREG and offers the attached comments for consideration by the NRC.

If you have any questions or require additional information, please contact Julie Sickie, Vice President - Training at (410) 610-5724.

Respectfully,

James Barstow
Director, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Comments on Draft NUREG-1021, Revision 11

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

Add= m. Scheetz (mcs7)
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Comments on Draft NUREG-1021, Revision 11

The U.S. Nuclear Regulatory Commission (NRC) issued draft Revision 11 to NUREG-1021, *"Operator Licensing Examination Standards for Power Reactors,"* for public comment. The draft NUREG provides NRC policy and guidance for the development, administration, and grading of examinations used for licensing operators at nuclear power plants under the NRC's regulations contained in 10 CFR 55, *"Operator Licenses."* This draft NUREG also provides guidance for maintaining operators' licenses, and for the NRC to conduct requalification examinations when necessary.

Exelon Generation Company, LLC (Exelon) appreciates the opportunity to comment on the draft NUREG and offers the comments contained in the attachment for consideration by the NRC.

Exelon reviewed the draft NUREG, as well as the NRC memorandum from James M. Trapp to William M. Dean, dated November 4, 2014, entitled *"Operator Licensing Lessons Learned Review Team (LLRT) Report"* (ML15124A615). As stated in the LLRT report, the NUREG-1021 draft Revision 11 recommendations: "...*should be viewed as enhancements to promote consistency across the regions.*" Exelon is concerned that a number of the approximately 200 changes to the examiner standards may not be viewed as enhancements, but could be considered significantly impactful changes to the examiner standards. Exelon is concerned with the following changes described in the draft NUREG:

- The new grading criteria that change the lowest rating factor from a "1" to a "0" will require expense and resources in aligning current practices and procedures to align with the change. This is not considered an enhancement and introduces changes to what was already an accepted practice in previous revisions of the examiner standards. The proposed grading changes could create a higher likelihood of failing a competent applicant, and could have a negative economic impact on licensees without any corresponding improvement in public health and safety. Exelon recommends maintaining the current grading criteria.
- The new grading criteria with respect to a missed critical task would result in a three-point deduction with a score of "0." Exelon believes that this is not a fair evaluation of the applicant. Revision 10 to NUREG-1021 had a decrease of two points for this issue, and since a "0" has more consequences on the overall grade, consideration should be given to maintain a two-point deduction. If the applicant has more issues past one critical error, they will appear and be graded in other areas, which would then lead to an accurate assessment of the applicant.
- The new grading criteria allows for non-critical errors to result in point reductions in more than one area. This results in higher impact to students for non-critical errors and could increase the failure rate. Exelon recommends to only allow for non-critical errors to impact one area that is most applicable to the error.
- The new grading criteria would eliminate the allowance for the examiner to give points back for non-critical errors. Exelon believes this allowance was necessary, and provides the examiner a better overall picture of the candidate's ability during the operating examination. Exelon recommends maintaining this allowance.

- Exelon is concerned with the new 50% overlap requirement. Current simulator examinations are designed to have sufficient complexity to allow a complete evaluation. Excluding 50% of all previously developed events from the last two NRC examinations would lead to the inclusion of more events with a lower safety significance, importance, or operational validity being submitted for the examination. Exelon recommends not introducing this new overlap requirement.
- Table 1 of this attachment contains comments and requested changes to the draft NUREG-1021, Revision 11 for NRC consideration, along with Exelon's proposed recommendations.

Exelon would also like to comment on the proposed NUREG-1021 changes based on Project AIM, most notably, the proposed reduction of the number of NRC Generic Fundamental Exams (GFEs) from four annually to two annually (biannually). While this initiative offers a reduction in cost for the development and implementation of GFE for the NRC, there are several unintended consequences that may need to be considered, for both the NRC and the industry. For example:

- A reduction from four to two GFEs per year will unduly challenge stations to start initial license classes that may not be synchronized with strategic starting dates based on station needs and priorities.
- Since initial license classes would commence twice per year, it stands to reason that they will conclude during two quarters of a given year. This will likely result in a compression of final NRC exam dates, affecting both NRC resources and licensee resources.
- Table 2 of this attachment includes Exelon's comments and recommendations related to the proposed reduction of NRC GFEs.

Finally, Revision 11 of NUREG-1021 regarding Examiner Standard (ES) 501, *"Initial Post-Examination Activities,"* discontinues the process of performing informal reviews of license application denials. Under draft Revision 11 of the NUREG, NRC headquarters will no longer be able to intervene and overturn an NRC regional decision of an operating license appeal, in that continued appeals will go straight to the Atomic Safety and Licensing Board (ASLB). Exelon believes this revision adds additional work and time to what was previously an acceptable and efficient process.

Exelon also encourages the NRC to hold additional stakeholder meetings to discuss resolution of industry comments on the proposed revision to NUREG-1021 pertaining to operator licensing standards. This will promote alignment and effective resolution of the industry's comments while ensuring there is no undue burden on candidates, examination preparers, or examiners.

Table 3 of this attachment contains Exelon's administrative/editorial related comments pertaining to draft NUREG-1021, Revision 11.

Table 1

Comments and Recommended Changes to Draft NUREG-1021, Revision 11

Section, Page, and Line #	Comment	Proposed Recommendation
ES-303, Section D.2.b	Exelon considers changing the lowest rating factor from 1 to 0 unnecessary and will require licensees to expend resources aligning current practices and procedures to the change. The NRC examiners and the NUREG already recognize that sometimes the grading does not match the performance and judgment is required for a licensing decision. See ES-303 Section 2, Page 1-19 Lines 4-8 for further details. This change will require significant resources (time/money) for what experience has shown is less than a 1% occurrence.	Exelon recommends leaving grading scales as they are and make it a practice of using the guidance in ES-303 Section 2, Page 1-19 Lines 4-8 to resolve conflicts between what the grade is the judgment of the examiner.
ES-303, Section D.2.b.	In the proposed revision, a missed Critical Task (CT) would result in a 3-point reduction with a score of 0. Exelon does not believe this to be a fair evaluation of the applicant. Revision 10 had a decrease of 2 points for this issue and since a 0 has more consequences on the overall grade, consideration should be given to a 2-point deduction. If the applicant has more issues past 1 critical error, they will appear and be graded in other areas, which would then lead to an accurate evaluation of the applicant.	Exelon recommends changing "...a missed CT results in a 3-point deduction for an 'RF Score' of '0'" to "a missed CT results in a 2-point deduction for an 'RF Score' of '1.'" Exelon also suggests revising other guidance in the NUREG to align with this comment.

Table 1

Comments and Recommended Changes to Draft NUREG-1021, Revision 11

Section, Page, and Line #	Comment	Proposed Resolution
ES-303, Section D.2.b	<p>The proposed language of Revision 11 eliminates the allowance to give points back for noncritical errors. This allowance was necessary to provide a candidate who is competent but makes just a few errors to be penalized with relief.</p> <p>During a scenario an applicant can have multiple chances to show competency in an area. Some scenarios provide more than the expected three chances and therefore can fail the applicant who is at the minimum standard. The practice of allowing points back can provide the examiner a better picture of the candidate's ability. Due to the number ratings being revised to more stringent criteria, this is even more important to the rating of the candidate than in previous exams.</p>	<p>Exelon recommends retaining the wording from Revision 10, "...If an applicant makes a single error related to a rating factor circle an "RF Score" of "2".... "If an applicant makes two errors related to a rating factor, circle an "RF Score" of "1" for that rating factor unless the applicant correctly performed another...."</p> <p>Activity (or activities) related to the same rating factor, in which case the "RF Score" shall remain at "2." In either case, a justification of the "RF Score" shall be documented on the applicant's Form ES-303-2. For example, a score of "1" shall include documentation such as "the applicant correctly performed no other activities related to this RF during the simulator operating test"; whereas a score of "2" shall include documentation such as "the applicant correctly performed another activity associated to this rating factor." As stated above, if an error is related to a critical task then this requires an "RF Score" of "1."</p>

Table 1

Comments and Recommended Changes to Draft NUREG-1021, Revision 11

Section, Page, and Line #	Comment	Proposed Resolution
ES-303, Section 1.d, Page 3 of 9, Beginning Line 8	Exelon believes the new method of grading Technical Specification (TS) evaluation opportunities will result in unbalance difficulty between exams. Under the current guidelines each event can only have one TS evaluation for a design target of two. With the new requirement some applicants could end up with double or more of others.	Exelon recommends keeping the Revision 10 design criteria OR add clarification that a single event that requires two TS action statements to be entered will meet minimum design criteria. While this solution will not completely eliminate the concern, it makes it much more manageable when designing quality exams.
Appendix D.f, Page D-7	Exelon believes the new 50% overlap requirement will result in less operationally challenging exams. Current exams are designed to have sufficient complexity of events to allow a complete evaluation. This new requirement will drive licensees to use less complex events that will reduce overall difficulty of exams. We will need to use more <i>"address alarm," "turn a switch"</i> type events to minimize overlap. These events previously were not allowed to be a portion of pre-major events.	Exelon recommends not introducing this overlap requirement.
ES-401, Section E.2	Considering the workload of NRC chief examiners, the practice of "The chief examiner shall consolidate the comments from all NRC reviewers and submit one set of comments to the author or facility contact," can cause significant delays in the facilities receiving the 401-9 comments. These delays often challenge our procedures and processes.	Exelon recommends changing the exam review feedback to allow partial 401-9s to be provided to the sites to allow the exam team to begin processing them sooner.

Table 2

Recommendations to the NRC Proposal of Two NRC Generic Fundamentals Exams

Option 1: Eliminate the standalone Generic Fundamental Exam (GFE) and include a sample of generic fundamental knowledges as part of the NRC license final written exam.	
Justification	Operator Training programs are required by 10 CFR 55.4 to be based on a Systems Approach to Training (SAT). INPO ACAD 10-001, <i>"Guidelines for Initial Training and Qualification of Licensed Operators,"</i> contains guidance for the basis of the training program. This guidance includes the generic fundamental topics that are also contained in the Knowledge and Abilities (K/A) catalogs (NUREG-1122 and 1123) which link the topics to the § 55.41 and § 55.43 attribute as applicable. Based on these requirements, this knowledge is required to be taught and examined as part of the site specific training program. In addition, both the Utility and INPO periodically review and assess training program content; specifically, evaluating for training program compliance with the ACAD requirements.
Benefit	NRC benefits would be the elimination of a redundant examination and reduction in administration of request for individuals taking the GFE. All CFR-required written examination requirements for the initial candidate can be met with one test, thereby streamlining the oversight process.
Risk	Marginal. A SAT-based approach would still require relevant fundamentals based learning objectives to be present in a training program. Additionally, candidates will already have the strictly theory-based fundamental knowledge based on the program requirements and will gain the operational fundamental based knowledge through the site specific license training programs. While no longer requiring a GFE specific exam, GFE would still be sampled on an NRC exam.
Risk Mitigation	By utilizing a SAT-based approach to ensure all relevant fundamentals-based learning objectives are present in the site specific training program, all required knowledge would still be taught and evaluated to license candidates. This would result in program examinations, in addition to the final NRC exam, ensuring the mastery of fundamental topics.
Change Requires	Changes to NUREG-1021 that may be required to implement this recommendation include: <ul style="list-style-type: none"> • Revising ES-401, <i>"Preparing Initial Site-Specific Written Examinations,"</i> sample plan methodology and outline forms. • Deleting ES-205, <i>"Procedure for Administering the Generic Fundamentals Examination Program,"</i> and incorporating relevant guidance into ES-401. One specific item to be addressed would be limits on bank usage. • Appropriate guidance could also be added to Appendix B, <i>"Written Examination Concepts."</i>

Table 2

Recommendations to the NRC Proposal of Two NRC Generic Fundamentals Exams

Option 2: Add generic fundamentals as part of the education requirement for eligibility to enter a license program and sample fundamental knowledge as part of the final NRC license exam.	
Justification	Operator training programs are required by 10 CFR 55.4 to be based on a SAT. Moving generic fundamentals to an education requirement for eligibility to enter a license class would have no adverse effect on the SAT process and would allow for better screening of potential license candidates prior to entry into a license program. This would be accomplished through a combined effort from the NRC and INPO. INPO ACAD 10-001, <i>"Guidelines for Initial Training and Qualification of Licensed Operators,"</i> contains guidance for the basis of the training program. This guidance includes the generic fundamental topics that are also contained in the K/A catalogs (NUREG-1122 and 1123) which link the topics to the § 55.41 and § 55.43 attribute as applicable. Based on these requirements, this knowledge is required to be taught and examined as part of the site specific training program and could be moved to a prerequisite for entering a license program. In addition, both licensees and INPO periodically review and assess training program content; specifically, evaluating for training program compliance with the ACAD requirements. To meet 10 CFR 55 requirements, the generic fundamentals knowledges will be evaluated in the accredited training program using the SAT process and will be examined as part of the 75 question NRC Reactor Operator (RO) examination. (See Option 1 above for examination details)
Benefit	NRC benefits would be the elimination of a redundant examination and reduction in administration of request for individuals taking the GFE. Utilities would be able to screen out additional individuals prior to being enrolled into a license program. All CFR-required written examination requirements for the initial candidate can be met with one test, thereby streamlining the oversight process.
Risk	Marginal. A SAT-based approach would still require relevant fundamentals-based learning objectives to be present in a training program. Additionally, candidates will already have the strictly theory-based fundamental knowledge based on the program eligibility requirements and will gain the operational fundamental-based knowledge through the site specific license training programs. While no longer requiring a GFE specific exam, GFE would still be sampled on an NRC exam.
Risk Mitigation	By utilizing a SAT-based approach to ensure all relevant fundamentals-based learning objectives are present in the site specific training program, all required knowledge would still be taught and evaluated to potential license candidates. This would result in program examinations, in addition to the final NRC exam, ensuring the mastery of fundamental topics.
Change Requires	Changes to NUREG-1021 that may be required to implement this recommendation include: <ul style="list-style-type: none"> • Revising ES-401, <i>"Preparing Initial Site-Specific Written Examinations,"</i> sample plan methodology and outline forms. • Deleting ES-205, <i>"Procedure for Administering the Generic Fundamentals Examination Program,"</i> and incorporating relevant guidance into ES-401. One specific item to be addressed would be limits on bank usage. • Appropriate guidance could also be added to Appendix B; <i>"Written Examination Concepts."</i>

Table 2

Recommendations to the NRC Proposal of Two NRC Generic Fundamentals Exams

Option 3: Develop an on-demand examination for GFE maintained by either the NRC or the industry.	
Justification	<p>Operator Training programs are required by 10 CFR 55.4 to be based on a SAT. INPO ACAD 10-001, <i>"Guidelines for Initial Training and Qualification of Licensed Operators,"</i> contains guidance for the basis of the training program. This guidance includes the generic fundamental topics that are also contained in the K/A catalogs (NUREG-1122 and 1123) which link the topics to the § 55.41 and § 55.43 attribute as applicable. Based on these requirements, this knowledge is required to be taught and examined as part of the site specific training program. In addition, both the Utility and INPO periodically review and assess training program content, specifically evaluating for training program compliance with the ACAD requirements.</p> <p>Currently, ES-401 requires that the written license examination be provided in two sections and that it samples the 14 items in 10 CFR 55.41(b). Because the GFE topics are evaluated in the 50-question standalone Generic Fundamentals Exam, they are significantly oversampled considering the remaining topics are sampled in the 75-question RO Written examination. If it is going to be required to continue conducting the GFE standalone exam, an on demand examination process should be developed. There are currently thousands of NRC approved generic fundamental questions that could be used by a systematic exam software program to randomly select questions per a standard exam outline for utilities to administer to license candidates.</p>
Benefit	NRC benefits would be the elimination of the development and administration of GFE and the ability for NRC initial examinations administrations to be more levelized throughout a calendar year.
Risk	Marginal. Possible increase in exam security issues.
Risk Mitigation	Evaluate any potential new vulnerability to exam issues and put in place additional measures as necessary to ensure exam security is maintained.
Change Requires	<p>Changes to NUREG-1021 that may be required to implement this recommendation include:</p> <ul style="list-style-type: none"> • Revising ES-401, <i>"Preparing Initial Site-Specific Written Examinations,"</i> sample plan methodology and outline forms • Deleting ES-205, <i>"Procedure for Administering the Generic Fundamentals Examination Program,"</i> and incorporating relevant guidance into ES-401. One specific item to be addressed would be limits on bank usage. • Appropriate guidance could also be added to Appendix B, <i>"Written Examination Concepts."</i>

Table 3

Editorial Comments Related to Draft NUREG-1021, Revision 11

<u>Section</u>	<u>Page</u>	<u>Comment</u>
ES-201	4 of 31	Under Paragraph h, second bullet: <i>"in any way"</i> was added to require submission of the original question anytime a question is modified <i>"in any way."</i> Exelon is requesting further clarification regarding the meaning of <i>"in any way."</i> Does it refer to typos, editorial changes, and changing the fonts? What is the actual goal of this change because it seems to add unnecessary administrative burden to the process.
ES-302	11 of 13	As stated in Appendix D, Section D.2 (Page D-17), emergency event classification is not required by NUREG-1021 to be part of the simulator scenario. The additional sentences added to ES-302, Section D.3.n, seem to suggest otherwise. Exelon is requesting further clarification concerning the wording in ES-302.
ES-401	4 of 50	The last bullet states: <i>"Is the K/A more appropriately tested on the written examination rather than the operating test?"</i> Exelon believes that it might be better stated as: <i>"Is the K/A more appropriately tested on the operating test rather than the written examination?"</i> This section lists reasons to consider rejecting a K/A from the written exam so this change would make more sense and would also make the first sentence agree with the last sentence in that paragraph (i.e., The justification should include one or more reasons why the operating test is a better evaluation tool.).
ES-401	6 of 50	Under Paragraph e, the last sentence states: <i>"The NRC must receive the revised outline along with Form ES-401-4 by the date agreed upon when the examination arrangements were confirmed (normally approximately 90 days before the scheduled exam date)."</i> Form ES-201-1, Item #7 requires the revised written exam outlines to be submitted 120 days before the scheduled exam date. Exelon recommends changing the description in ES-401 to "120 days" to align with Form ES-201-1.
ES-401	9 of 50	Under Paragraph 4.a it states: <i>"Format the examinations using a one-question-per-page layout by placing one complete question on each page."</i> Exelon is requesting further clarification on how this would apply to questions that contain imbedded references (e.g., flowchart, drawing, etc.) that take up more than a single page.
ES-401 / ES-401N	48 of 50 / 51 of 53	Form ES-401-8 Instructions. Exelon recommends that the last sentence should state: <i>"You have 9 hours to complete the combined examination..."</i> to match the change in Appendix E (page E-1).
ES-402	5 of 7	Under Paragraph 4.d. Exelon recommends that the first sentence state: <i>"...and 9 hours for the combined RO/SRO exam..."</i> to match the change in Appendix E (page E-1).

Table 3

Editorial Comments Related to Draft NUREG-1021, Revision 11

<u>Section</u>	<u>Page</u>	<u>Comment</u>
App. D	D-10	Under Paragraph g, last sentence: the word " <i>shall</i> " was added to require use of at least one EOP contingency procedure in each scenario set. Exelon believes that this new requirement should be incorporated into Form ES-301-4, " <i>Target Quantitative Attributes</i> " (per scenario), Item #5.
App. D	D-12	Under Paragraph j, the last sentence of the Note should state: " <i>The action of initiating the actuation is not a CT.</i> "
App. D	D-12	Under Paragraph j, the note indicates an unintentional RPS or ESF actuation may be a CT if it results in something significant (plant degradation, alters mitigation strategy). The paragraph that follows says if an unintended RPS or ESF actuation occurs (but could have been prevented) then the CT criteria have been met. The note and the paragraph that follows seem to conflict with each other; therefore, Exelon is requesting further clarification.
App. D	D-12	Under Paragraph j, the last sentence of the 2 nd to last paragraph indicates that each scenario must have at least 2 CTs. Form ES-301-4 requires at least 2 <i>EOP-based</i> CTs. ES-301, Page 15 of 31, Paragraph d also states each scenario must have at least 2 CTs. Exelon requests further clarification and consistency in the description.
App. D	D-15	The first paragraph on Page D-15 (which was added on Revision 11) appears to be redundant to the last paragraph of Section D.1.c on Page D-16.
N/A	N/A	Regarding implementation of Revision 11, will there be a 6-month implementation window as was the case for Revision 10? How will this be applied when considering exam development versus exam administration? (It is important to note that exam development typically starts at least 6-9 months prior to the administration date.) When will the 6-month clock start? For example, will the new simulator scenario grading criteria apply to an exam that <u>begins development</u> 6 months or longer after Revision 11 becomes effective or will the new criteria apply to an exam that is <u>administered</u> 6 months or longer after Revision 11 becomes effective? Exelon would appreciate further clarification regarding implementation of Revision 11.