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*81 FR 6301-1 (15)*

**Docket:** NRC-2016-0006

Operator Licensing Examination Standards for Power Reactors, NUREG-1021, Revision 11

**Comment On:** NRC-2016-0006-0013

Operator Licensing Examination Standards for Power Reactors; Reopening of Comment Period

**Document:** NRC-2016-0006-DRAFT-0026

Comment on FR Doc # 2016-07907

## Submitter Information

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## General Comment

See attached file(s)

## Attachments

05-03-2016\_NRC\_Industry Comments on Operator Licensing Examination Standards

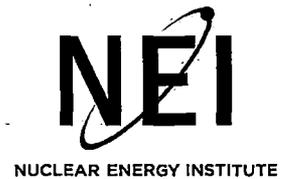
05-03-2016\_NRC\_Industry Comments on Operator Licensing Examination Standards\_Attachment 1

05-03-2016\_NRC\_Industry Comments on Operator Licensing Examination Standards\_Attachment 2

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Template = ADM - 013  
E-RIDS= ADM-03  
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**JOSEPH E. POLLOCK**  
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May 3, 2016

Ms. Cindy Bladey  
Office of Administration, MS OWFN-12-H08  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject:** Industry Comments on Draft Revision 11 of NUREG-1021, *Operator Licensing Examination Standards for Power Reactors*, 81 Fed. Reg. 6301; Docket No. NRC-2016-0006

**Project Number: 689**

Dear Ms. Bladey:

On behalf of the nuclear energy industry, the Nuclear Energy Institute (NEI)<sup>1</sup> appreciates the opportunity to provide comments on proposed Revision 11 of NUREG-1021. These comments supplement the comments submitted by NEI on October 28, 2015. As stated in that letter, we agree with the NRC conclusion from the Operator Lessons Learned Review Team (LLRT) Report (NRC Memorandum from James M. Trapp to William M. Dean, dated November 4, 2014, Accession No. ML15124A615) that "the license operator examination process is an extremely high quality process that has been demonstrated over time to successfully evaluate and discriminate the level of competency of operator license applicants" and, given this, any changes to the operator licensing process should be focused on and limited to addressing the specific concerns arising from the Atomic Safety and Licensing Board (ASLB) reversal.

The proposed changes have not been limited to those concerns arising from the ASLB reversal. The ASLB did not conclude that the examination standards were incorrect but concluded that the administration of the examination to the applicant was not "equitable and consistent" with the standards applied to other applicants. The proposed changes to the grading of the operating examination are not responsive to this conclusion. The proposed grading changes would have the impact of increasing exam failure rates with no justifiable safety benefit, would create a higher likelihood of failing a competent applicant, and would have a negative economic impact on licensees without any corresponding improvement in public health and safety. As such, the proposed changes are not consistent with the NRC's conclusion that the existing process is of extremely high quality.

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<sup>1</sup> The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

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NEI does not believe the NRC has provided adequate justification that the issues identified from the LLRT warrant the significant changes being made to the standards for the grading of the operating examination. The LLRT report stated, "While the LLRT does not believe that these recommendations will have a significant impact [*sic*] the overall operating test failure rate, steps such as benchmarking and piloting these changes would be necessary to confirm this assumption." A NRC review of 740 exams determined the increase in failure rates of the operating exam from these changes is expected to be 10% at a minimum. Therefore, the 'benchmarking' does not confirm the LLRT assumption and, as such, should be reconsidered. One negative data point does not warrant the changes being proposed to the grading of the operating exam. The proposed grading changes, which are not necessary to address the ASLB concerns, discredit the going-in conclusion that the process has successfully evaluated and discriminated the level of competency of operator license applicants in the past. Furthermore, despite the discussion about backfitting in the proposed revision, a 10% increase in failure rates is a significant cost to a licensee and is clearly not a change that would be expected from a "medium priority enhancement" to "reflect lessons learned and ensure uniform conditions."

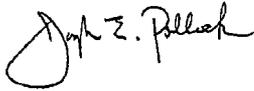
One of the major conclusions of the NRC LLRT was that the current flexibilities in the Examiner Standards have led to implementation differences among the four regional offices. The LLRT asserts that their recommendations would remove this flexibility from the Examiner Standards, improving reliability of outcomes. However, one of the key recommendations in the LLRT report would "make the grading of the operating exam more discriminating *allowing examiner additional flexibility* in making these important licensing decisions" (emphasis added). NEI believes such changes undermine the ultimate objectives of the review team. As noted above, NEI specifically disagrees with the recommended changes to the grading of the operating exam. We find that these recommendations would have the unintended consequence of injecting additional subjectivity in grading, will lead to higher failure rates, and would likely result in an increase in the number of appeals to the ASLB. The widened grading scale could allow examiner bias to creep into the process and is in direct conflict with the LLRT charter. The industry believes that the existing grading criteria are reliable and adequate and should be retained.

The proposed changes to include greater independence in the appeal process do directly address the ASLB findings and are the corrective actions that will prevent recurrence. However, these proposed corrective actions are being eliminated by the Project AIM initiative to terminate the informal appeal process. Therefore, the informal appeal process should not be terminated and replaced with a longer period to address exam comments. Although the Commission voted in favor of this Project AIM initiative it does not appear that they would have been aware that enhancements in this process are being largely credited as corrective actions to prevent recurrence of the ASLB reversal. This proposal not only eliminates the LLRT's recommendations for enhancing the process but also could increase the number of formal appeals which would erase any savings generated by this proposal.

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Detailed comments on the changes to the examination standards are provided in Attachment 1.  
Comments addressing the Project AIM initiatives that were added to the proposed revision are included in Attachment 2.  
If you have any questions on this matter, please do not hesitate to contact me.

Sincerely,



Joseph E. Pollock

Attachments

- c: Ms. Michelle Evans, NRR, NRC
- Mr. Scott A. Morris, NRR/DIRS, NRC
- Ms. Maurin C. Scheetz, NRR/DIRS, NRC

**NEI Comments on Proposed Rev. 11 of NUREG-1021, Operator Licensing Examination Standards for Power Reactors**

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
<b>GENERAL</b>				
1	Change Log	The ES-201 C.1.a comment and elsewhere says "incorporates FAQ XXX.X". Consider changing this to "OLPF Document" where "FAQ" appears.		Document is generally known as the Operator Licensing Program Feedback document and the NRC has been consistent at emphasizing that it is NOT an FAQ.
2	Change Log	Bottom of page xvi, C.3.i change	Should say "removed reference to questions since these are not pre-scripted."	There are no pre-written questions for JPMs or scenarios to distribute.
3	Change Log	ES-301 D.5.a entry	Remove "at a Region IV Grand Gulf exam in 2014."	Calling out the plant name, region and year is unnecessary.
4	Change Log	ES-401 C.1.a entry	Description of what's in ES-401 doesn't match what's in ES-401	ES-401 only talks about written outlines.
5	Change Log	Form 403-1 entry	Should say "ES-403-1" vice "ES-401-3"	Typo
<b>ES-201</b>				
6	ES-201, Form ES-201-1 and throughout	Overhaul the examination timeline to have target dates for activities start sooner.  Also, split the exam submittal into two parts with the chief and station determining which will be delivered		Allows the stations and chief examiners to plan work better. Currently, there is always a rush at the end of the process to get the exams, especially the written, reviewed, revalidated and approved prior to the exam dates. Expanding the timeline in the

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		<p>first. Further, add the pre-submittal items to the timeline so there is enough time to make course corrections based on this early feedback</p> <p>Examples include:</p> <ol style="list-style-type: none"> <li>1. 150 day phone call would be at ~300 days</li> <li>2. Outline delivery at 270 days</li> <li>3. Corp Notification letter at 240 days</li> <li>4. Outline and pre-submittal items at 120 days</li> <li>5. Outline and pre-submittal feedback at 105 days</li> <li>6. First part (op test or written) at 90 days</li> <li>7. Reviews completed sooner</li> <li>8. Etc. (see attached) Items on attached timelines in <b>BOLD</b> are needed to consistently prepare quality exams.</li> </ol>		<p>NUREG to align more closely with what stations and chief examiners are actually doing would improve exam quality and allow adequate time to find and fix issues without running out of time.</p> <p>It is not desirable to have the written exam still undergoing review and approval when the operating test starts. It also detrimentally impacts exam quality.</p>
7	ES-201 C.1.f	NRC Staff will prepare the written examination outline for both NRC and licensee developed examinations.	<p>Add option for NRC to decide who provides the outlines, decision from NRR</p> <p>"At the discretion of NRR/NRO operator licensing program office, either the NRC Staff or the facility licensees will prepare all written</p>	Provide an option for NRR office to decide to change whether or not the NRC will continue to develop written outlines without necessitating a revision to NUREG-1021.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
			examination outlines, provided this is performed consistently across all regions."	

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
8	ES-201 C.1.h	<p>Added words "in any way" to the second bullet.</p> <p>C.1.h talks about items, both operating test and written exams. The section needs clarification.</p>	<p>Reword the section:</p> <p>In its examination submittal, the facility licensee or its contractor shall provide the following information for each proposed written or operating test item:</p> <ul style="list-style-type: none"> <li>• State the source of the item; bank for unmodified items from the facility's or any other bank, modified from the original or new.</li> <li>• If item is from a bank, state the bank and when it was used on an NRC license examination, if applicable.</li> <li>• For modified <i>written</i> items, include a copy of the original item.</li> </ul>	<p>If the item is called "bank", why submit the original question? If it's designated as "modified", it makes sense to prove it's modified (which is a different category than bank when counting item types).</p> <p>If it's required "State the source of each item..." then why would they be "encouraged to identify items used...at the facility"? It's required already.</p>

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9	ES-201 C.1.i, C.3.f	Discussion of facility review process for NRC-Prepared exams	Sixty (60) days is not sufficient to accomplish this paragraph. The date should be at T-150. This requirement is not documented on the ES-201-1 form.	When NRC writes an exam, it still needs to be validated, revised and re-validated to ensure the exam is clear, accurate and fair. This date should be at T-150. Given the time required to perform adequate validation and work hour restrictions on qualified Licensed Operators, sufficient time needs to be provided to ensure the facility has time to review the exams, provide them to qualified operators for validation, return the exams with comments, wait for needed changes and perform revalidation. This will ensure the exams test at the right level of discrimination and have adequate operational validity.
10	ES-201 C.1.i and Form ES-201-1	Timeline for NRC-prepared examinations	NRC-prepared examinations should either be specifically included on Form ES-201-1 or an additional Exam Prep checklist should be generated for NRC prepared exams.	Although the line items applicable to NRC-prepared exams are designated in the current timeline, the due dates for many of these activities should be different than for a facility-prepared exam due to validation and extra steps necessary to review and revise the exams when NRC prepares them.
11	ES-201 C.1.j		This requirement is currently impossible to meet for new reactors since the NRC will not approve a simulator that is not plant-referenced.	Resolve the designation of commission-approved simulators. Suggest using guidance and precedence found in NUREG-1262 that allowed the use of non-plant referenced simulators prior to the simulator certification process that became a requirement in the early 1990s.

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12	ES-201 C.1.k	Exam comments should be reviewed by phone.	State "These meetings will normally be conducted via telephone. Based upon a request by the facility or region, a face to face...."	Communicate the preference without the need to incorporate branch chief approval, station concurrence. Additional administrative burden to establish such a formal process for how and when to meet to discuss comments.
13	ES-201 C.2.c Fifth bullet	"via cover letter"	Change to "provided to the NRC as a formal submittal (including cover letter) for NRC review and approval."	For clarity, the phrase "via cover letter" is not defined nor used elsewhere in this NUREG and seems ambiguous.
14	ES-201 C.2.d	"The regional offices should also keep the facility informed of the dates by which the region expects to provide its comments regarding the licensee's submittals."	"The regional offices shall also keep the facility informed of the dates by which the region will provide its comments regarding the licensee's submittals as documented on Form ES-201-1"	The NRC should set and respect deadlines for returning comments. The proposed expanded timeline provide enough time to thoroughly review and comment. All parties involved need to be held to deadlines.

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15	ES-201 C.2.h Second paragraph		Clarify the 30 day delay allowance	<p>Some clarification would be appreciated here. What exactly are the parameters for this 30 days? From where is it measured? The first day of the operating test? The last day? The originally scheduled day? Depending on how this is interpreted, the actual date could fluctuate by two weeks or more.</p> <p>From the final day of the operating test (or written) would be preferred.</p>
16	ES-201 C.2.h		Expand to 90 days	Allow region to approve up to 90 based on split exams, large classes, and possibility of going to two GFE exams per year.
17	ES-201 C.2.j	"After the chief examiner has verified that the necessary changes and corrections have been made, the responsible supervisor will review..."	"After the chief examiner has verified that the necessary changes and corrections have been made, the chief examiner will return the exam to the facility for any facility-required final validation in order to ensure that revisions made during the review process have not negatively impacted the operational and discriminatory validity of	Many facilities require a final validation of the exam following the NRC/facility review and revision session. This final validation ensures that the product is fair and retains operational and discriminatory validity. During the review process, nearly all exam instruments have been changed to various degrees and, experience has shown, even seemingly insignificant changes can seriously impact the validity of the product. It is important to ensure no flaws were inadvertently created during the revision process.

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			the exam. Once the facility has performed final validation of the exam, the responsible NRC supervisor will review..."	
18	ES-201 C.2.l	Approximately 7 days...	This should be at least 21 days.	Seven days is not sufficient to address any potential issues. Having an additional 14 days to address potential issues and concerns would help ensure the facility and the NRC has addressed all concerns before the first day of the exams.
19	ES-201 C.3.g	Alignment with C.1.k	The second paragraph of C.3.g should be a duplicate of C.1.k to ensure the requirements are consistent.	
20	ES-201 C.3.j	Changed should to shall for surrogate use	Allow these decisions to be made at a regional level	Occasionally, the mix of candidates makes the use of surrogates more prudent. So long as the N+1 rule is adhered to, the branch chief should be able to approve the schedules.
21	ES-201 D.1.b and .c	No change	Examiners should not be allowed to examine at facilities where they were regular employees or contractors for some period of time, recommend 5 years.	If an examiner was an employee at a facility, it's an appearance of a conflict of interest.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
22	ES-201 D.2.b Fourth bullet	<p>“development of examination bank questions if the intent is to use them on the next NRC examination</p> <p>– If questions are simply being developed to expand the size of the question bank, then they would be treated as any other bank item and subject to the other criteria in NUREG-1021 (e.g., repetition from the audit exam).”</p>	<p>Remove bullet as it adds confusion or clarify the intent of the item.</p> <p>“development of examination bank questions for any use other than the current NRC or Audit examinations.</p> <p>-questions for the facility’s course banks may be developed but may not be added to common banks until the NRC exam has been administered.”</p>	<p>This item was added to address OLPF 401.32. The intent of the original question is not clear in the OLPF document since the referenced “instructor” may or may not be on exam security. As such, it cannot be determined what the context of the “use” referred to in the question is. As such, the proposed change is confusing and contradictory.</p> <p>Additionally, it is not clear what the “next” NRC exam is, does this mean the exam under development? It cannot, since development of questions for the exam under development is obviously an allowed activity. The outline for the “next” exam has not been drawn yet so any item developed outside the current sample plan may or may not fit onto the next exam.</p> <p>Given the possible consequences from misunderstanding this bullet, it is recommended that the bullet be deleted until any allowed activities being described can be described with greater accuracy.</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
23	ES-201 D.2.b	<p>Supervisors and managers having knowledge of ... review of examinations, ..., as well as the counseling of applicants concerning non-technical issues. However, those supervisors and managers may not provide ... feedback regarding the content of those examinations, quizzes, or programs in a manner that might compromise the integrity of the licensing examination as defined in 10 CFR 55.49."</p>	<p>Supervisors and managers subject to an exam security agreement may continue their general oversight of the training program for the license applicants, including the review of examinations, quizzes, and remedial training programs, as well as the counseling of applicants concerning non-technical issues. However, those supervisors and managers may only provide general feedback regarding quality of those examinations, quizzes, or programs and may not make specific comments regarding content of these in order to maintain the integrity of the licensing examination as defined in 10 CFR 55.49."</p>	<p>Clarify guidance to ensure management can perform oversight functions without jeopardizing security.</p>
24	ES-201-1 Form	<p>Pre-submittal items not on 201-1 Form</p>	<p>Add pre-submittal items to timeline, including dates for when they should be given to NRC and when NRC is expected to return them. (provided at T-120 with</p>	<p>Ensure that this practice is consistently applied across the regions/chiefs.</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
			comments due back to facility at T-105)	
25	ES-201-1 Form	-120 day item, revised written exam outline due	Remove this line item, add the 401-4 form to the -90 day operating test outline block.	This is not currently done in RII, which has provided the written outlines for several years. Before the written outline is provided, it is checked and approved by the NRC. The facility then reviews the outline when received and any changes made after this are made with the chief examiner's approval and documented on 401-4, Rejected KA list. The 401-4 should be submitted along with the written outlines as is done now with the understanding that the 401-4 will not be complete until the final exam is approved.
<b>ES-202</b>				
26	ES-202 C.1.a, Paragraph 3	"Such excusals...must take place within 1 year of the date on which the applicant completed the original examination."	Leave sentence as it is in Rev 10, replacing "waiver" with "excusal".  "Such excusals...must be requested within 1 year of the date on which the applicant completed the original examination."	Shortens the time from denial to reapplication. The adjudication of an appeal may not be closed within the time frame to allow the licensee to apply and develop/approve exam materials within one year if the maximum times are used throughout the exam process.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
27	ES-202 C.1.a, Paragraph 3	Although licensed operators can go up to 24 months between medical examinations, new license applicants are generally expected to be examined and certified as fit (on NRC Form 396) no more than 6 months before the anticipated date of licensing.	There should be an additional provision for SRO-Upgrade candidates that have a current RO license.	Upgrade candidates are still maintaining the conditions of their licenses and reporting changes in accordance with this section, so they should not be required to have another physical within 60 days (as long as they have had a physical within 2 years). This reduces cost for the licensees while still meeting the legal requirements for physical condition.
28	ES-202 C.2.b Paragraph 4	The word "in" is duplicated in the last sentence.		Typo
29	ES-202 C.2.c	Preliminary application information	Allowance for facilities to submit early, formal information on potential waivers. Information included in Form-ES-201-1 is not aligned with the T-60 day line item and the referenced paragraphs (ES-201, C.1.m; C.2.i; ES-202)	ES-201 C.1.m states "...facility licensee shall submit the license applications along with a...request [] that licensing examinations be administered." This occurs at 30 days. C.2.i states "Upon receiving preliminary...applications, approximately 30 days before..., the regional office shall...evaluate waiver and excusal requests...."  Both of these entries state "30 days" while the Form 201-1 states "-60" days. The process for when and how to submit early, formal evaluation requests for waivers/excusals needs to be clearer and all

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
				relevant paragraphs in ES-201, 202 and 204 need to be aligned.
30	ES-202 D.1.b.(1)	Refers to "1-year onsite"	Should be 6 months to align with D.1.a.(1)	
31	ES-202 D.1, .2 and .3	RO, SRO and LSRO Eligibility	Remove the sections for RO/SRO/LSRO eligibility, revise paragraph 2 to say "Follow NANT Guidelines as directed by pages 2 through 4 of this section."	Repeating the NANT guidelines is unnecessary and redundant. If guidelines are adjusted, the NUREG will have to be revised to match.
<b>ES-204</b>				
32	ES-204 C.2.b last paragraph	The region does not require written concurrence from NRR/NRO to deny an applicant's excusal or waiver request, but it should discuss its decision with the operator licensing program office before informing the applicant; formal concurrence may be desirable in some cases.	The region does not require written concurrence from NRR/NRO to deny an applicant's excusal or waiver request, but it shall discuss its decision with the operator licensing program office before informing the applicant; formal concurrence may be desirable in some cases.	NRR/NRO needs to provide an oversight role to ensure regional consistency.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
33	ES-204 D.1.i	Experience and Training guidelines	Delete to RG 1.8 and/or NANT guidelines	Redundant to guidance provided elsewhere
34	ES-204 D.1.k	"If an applicant passed the GFE more than 24 months before the date of license application,	If an applicant passed the GFE more than 60 months before the date of license application,	Allow flexibility, GFE exam program has been stable for a number of years. There is no discernable risk from expanding the time limit on accepting past GFE exams.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
35	ES-204 D.1.a	<p>"Note that an SRO-instant applicant who passed the operating test, achieved a score of 80 percent on the RO portion of the written examination, 76 percent on the SRO-only questions, and 79 percent overall would <i>not</i> be eligible for an excusal from the RO portion because the overall 80-percent cut score was not achieved. However, an SRO-upgrade applicant who passed the operating test, achieved a score of 80 percent on the RO portion of the written examination, 76 percent on the SRO-only questions, and 79 percent overall <i>would</i> be eligible for a waiver of the RO portion provided the applicant meets the three requirements for a waiver specified in ES-204 D.1.j."</p>	<p>"Any SRO applicant, upgrade or instant who scores 80% or higher on the RO portion of the licensing exam shall be eligible for an excusal for the RO portion of the exam if the score on the SRO portion of the exam is less than 70%.</p> <p style="text-align: center;">15</p>	<p>There should not be an inconsistency between SRO-I and SRO-U. In the example provided in the proposed revision, one candidate is eligible for an excusal of the RO portion of the exam and the other is not. Neither achieved an 80% overall thus they should not be treated differently.</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
<b>ES-205</b>				
36	ES-205		Delete ES-205, Add GFE Tier to NRC written exam	Recommend re-evaluation of GFES process. The required 10CFR55.41 items could be added to the final licensing exam, possibly as an additional tier to the written exam outline.
<b>ES-301</b>				
37	ES-301 B. third paragraph	U.A Nuclear Regulatory Commission	U.S. Nuclear Regulatory Commission	Typo
38	ES-301 B.1, last line	States "The 'Administrative Topics' are administered in a one-on-one...format...."	Remove "one-on-one" since they can be administered in a group format.	Align guidance with practice.
39	ES-301 D.3.c	"All SRO Administrative JPMs must be written at the SRO level."	"A majority of SRO Administrative JPMs must be written at the SRO level."	Mandating that all SRO admin JPMs be written at the SRO level eliminates testing any RO admin topics. Since RO tasks and duties are part of what SROs are being tested on, this requirement eliminates testing this aspect. Additionally, this adds additional work to exam preparation for little added benefit.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
40	ES-301 D.5.a paragraph 2	Allowance to place SRO-I at new facilities at either BOP or ATC	Extend this allowance to all plants.	This is not consistent with uniform conditions. Both BOP and ATC positions at current plants give ample opportunity to evaluate SRO competency 3. Both positions have adequate manipulations to evaluate board operation. Each candidate needs to demonstrate the ability to perform a variety of attributes on the Transient and Event Checklist (Form 301-5), as long as this requirement is met, they should be able to be at either position.
41	ES-301 D.5.b, ES-201-2, Item 4.d, et al	To maintain test integrity, every applicant shall be tested on at least one new or significantly modified scenario that he or she has not had the opportunity to rehearse or practice. A significant modification means that at least two events or conditions have been replaced or significantly altered such that operators will not recognize them from the previous two NRC	To maintain test integrity, every applicant shall be tested on new or significantly modified scenarios that he or she has not had the opportunity to rehearse or practice.  A significant modification means that at least two events, malfunctions or initial conditions have been replaced or significantly altered such that operators will not recognize them from the previous two NRC initial licensing operating exams.  Any repeated major events from the last two tests should be changed so as to alter the	The addition of percentage-based overlap requirements for scenarios is overburdening to exam development teams when the goal of "maintaining test integrity" can be accomplished through more effective, qualitative means. Application guidance can be provided for current, sufficient restrictions without the need to create additional requirements.  Additionally, these restrictions may, in effect, make the exams more predictable by limiting the scope of what may be examined.

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		<p>initial licensing operating exams....                      The final product ...Events found.... If a facility encounters difficulty ...                      Additionally, ...Furthermore, any other scenarios ....</p>	<p>course of action (within the emergency procedures) for the given scenario(s). It is expected that all major events would be broadly sampled over the course of several exams, and that no major event will routinely be omitted without justification.</p> <p>Furthermore, any other scenarios that are extracted from the facility licensee's bank must be altered to the degree necessary to prevent the applicants from immediately recognizing the scenarios based on the initial conditions or other cues.</p>	

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
42	ES-301 D.5.d	"A scenario must have at least two critical tasks."	Scenarios should be designed with at least two critical tasks.	<p>For the new reactor designs it is increasingly difficult to employ critical tasks that have a defined failure point, such as a parameter that will occur in a reasonable amount of time. Most events require more than 72 hours to reach these parameters based on the safety systems design.</p> <p>NUREG 1021, Revision 10 allows the chief examiner to include only one critical task because of the caveat that "The quantitative attribute target ranges that are specified on the form are not absolute limitations; some scenarios may be an excellent evaluation tool, but may not fit within the ranges."</p>
43	Form ES-301-4	Line 9 and 13 Revisions	Remove revisions, replace with a qualitative check of the scenarios with the previous two NRC exams ensuring sufficient diversity.	<p>Line 9: As noted above, restricting non-major item use in this way is too restrictive and unnecessary. The chiefs can (and do) evaluate the current and previous exams and determine whether they are sufficiently diverse.</p> <p>Line 13: If it is desired to make this an actual criterion, it should be consistently applied to tech spec calls, events seen, and scenarios performed, etc. This check is already accounted for on the 301-5 forms and the quantitative attributes on the bottom of Form ES301-4 which makes line 13 redundant.</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
44	Form ES-301-7	Added Operating Test Review Worksheets	Remove the forms	These forms are an unnecessary burden on the examiners and the facility, just extra administrative paperwork with little real value.
45	ES-301 Form 301-7	<p>NRC grading form to determine Operating exam acceptability. There are several typographical errors on this page:</p> <ul style="list-style-type: none"> <li>• Form ES 301-7 on Page 29 of 31 is missing the form title.</li> <li>• Page 30 of 31 item 2.b the word "difference" should be "different"</li> <li>• Page 30 of 31 does not allow for Non-EOP based critical tasks to be counted towards the scenario minimums, rather they must be EOP based.</li> <li>• Page 31 of 31 Item 2 typo ..."JPM column <b>No!</b> 5's"</li> <li>• Page 31 of 31 Item 3 typo includes epsilon "€" symbol</li> <li>• Page 31 of 31 Item 6 needs spacing corrected</li> </ul>		
<b>ES-302</b>				
46	ES-302 D.3.h	Examiner's now have to initial all charts	Remove the requirement for examiner to initial charts.	Unnecessary burden, already takes an excessive amount of time between scenarios to reset the simulator.
47	ES-302 D.3.n	"...applicant is asked to classify the event..."	Emergency event classification is generally evaluated in the Admin JPM section. Applicant may be asked to classify the event following the scenario.	This practice is not at all consistently applied. This is typically done via the Admin JPM. Also, the classification is often escalated throughout the scenario, so classification accuracy and questioning the candidate after the event may not provide a realistic assessment of the candidate's ability to perform the function.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
<b>ES-303</b>				
48	ES-303 D.1.d	Guidance to treat every missed TS entry as an individual performance deficiency	Either grade them as a group associated with a specific component/instrument failure in the D-1 form or limit the number of individual items that can be included in a given scenario.	<p>There are several issues with this:</p> <ol style="list-style-type: none"> <li>1. Candidates on N+1 will have many more opportunities for failure than those who are not.</li> <li>2. Events/failures with complex TS calls will greatly expand the list of tech specs which must be identified.</li> <li>3. An SRO candidate performing as SRO during a complex scenario plus an N+1 could have 15-20 TS calls to make, with each mistake counted as a full-point deduction. Another candidate at the same facility who has more straightforward TS calls and no N+1 might only have two or three calls to make. Needless to say, this violates the concept of uniform conditions.</li> </ol>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
49	ES-303 D.1.d	Clarification that there is no limit to the number of rating factors for a single performance deficiency	<p>Revert to Rev 10 wording, which allows only two rating factors to be impacted.</p> <p>Performance deficiency should be counted against rating factor which is most (relevant) and could potentially be assigned to a second factor for significant deficiencies with solid written justification</p>	The LLRT recommended limiting an error to a single competency to promote consistency in grading among examiners. Leaving it open in an unlimited fashion, therefore, could promote inconsistency.
50	ES-303 D.2.b and elsewhere	Changing grading scale to 0-3 from 1-3	<p>Leave grading scale at 1-3.</p> <p>Consider possible options for expanding the grading scale in the next revision to 1021, for example, expand the band on both ends to 0-4, for example.</p>	Given that there is broad agreement that the current grading scheme is adequate to determine between competent and non-competent operators, there is no justification to arbitrarily alter the grading scale downward without adjusting the pass criteria.
51	ES-303 D.2.b	The proposed language of Revision 11 eliminates the allowance to give points back for noncritical errors. This allowance was necessary to provide relief for a candidate who is competent but makes a	Retain the wording from Revision 10 and the interim guidance. Since the ASLB review board hearing, no issues have been found while using this guidance.	<p>Since the ASLB review board hearing, no issues have been found while using this guidance.</p> <p>During a scenario, an applicant can be provided multiple opportunities to show competency in an area. Scenarios provide many more than the minimum number of opportunities and therefore can fail the applicant who is at the minimum standard. For example, there may be 20 control board</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
		few noncritical errors.		operations on an NRC exam for a given candidate. The candidate could perform at a 90% rate and be at a 1. The practice of allowing points back can provide the examiner a better picture of the candidate's overall 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.
52	ES-303 D.2.b	In the proposed revision, a missed critical task (CT) would result in a 3 point reduction with a score of 0.	Change "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.'"Revise other guidance in the NUREG to align with this comment.	This is not 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 failure of the applicant.
53	ES-303 D.2.b	Statement that failing a CT does not automatically result in failure.	Remove this statement	While this may be strictly true, it isn't generally true. Just remove it since it doesn't add any value to understanding the requirements. This statement could lead to unintended perception of standards regarding grading and critical tasks.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment	Justification
<b>ES-401</b>			
54	ES-401 C.1.a and D.1.e  (also in ES-201)	Review and submit a revised outline.	Remove the requirement for the facility to submit an outline that the NRC is responsible for generating.
55	ES-401 D.1.b  Next to last paragraph	Specifies that all KAs will be requested from the chief examiner	Add an allowance for another chief to provide a KA if the chief is not available.
56	ES-401 D.1.b	List of "Associated" Generic KAs	Review the list against the upcoming KA catalog changes. Provide direction consistent with what will be in the catalogs. At least one of the KAs has been deleted.(2.4.9)  Evaluate the list in light of pending changes to the KA catalogs and add words to account for changes to the lists.
Several of the KAs on the list are "Operating Test Preferred" and several more will be designated "SRO-only". It would be best to account for this now and put direction into the NUREG about what to do with them. For example, the facility shouldn't be provided an SRO only on an RO outline nor should there be an Op Test preferred KA on a written outline.			

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
57	ES-401 D.2.f Bullet 2	"...randomly select from among the available questions..."	Delete this bullet entirely	Randomly selecting among "available questions" is not necessary or desired since the KA has already been randomly selected and since there is always "an appropriate basis" for selecting a specific question as noted in the paragraph. Inevitably, one question will be a "best fit" for the KA and the test. The content validity concern is addressed by randomly selecting at the KA level.
58	ES-401 D.2.f Bullet 3	Information from OLPF 401-25	Remove the information.	The clarification is unnecessary and confusing. "...without reference to a bank..." should be "without referring to a bank" and "not previously exposed at the facility" should be removed as this implies that you could take a bank question from somewhere else and , since it hasn't been "exposed at the facility", it's a new question. This is erroneous.
59	ES-401 D.2.g	Optional distractor analysis	Make the provision of distractor analysis mandatory.	The facility should be required to provide justification for answers and distractors to minimize problems with the technical and psychometric attributes of the questions.
60	ES-401 E.2.c	Question sampling	Remove this option or expand it to allow the chief to sample fewer or sooner without being so prescriptive.	Since the whole exam will be reviewed and the NRC and facility want to come to the same place with a fair and discriminatory exam, the chief should be allowed to sample, return for like-kind issues, pre-review as desired, return questions in batches so the facilities can be working on some questions while the rest are being reviewed, etc.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
61	ES-401 Form 5	Question History Note	Remove "optional..." note due to change in ES-201 C.1.h	
62	ES-401 Form 6	Revision of Step 7	Simply say "at least 50 percent of the ...SRO-only portion...are written at the C/A level" and leave it.	The remainder is just information and doesn't enhance understanding.
63	ES-401 Form 8	Applicant Signature Block	Fix alignment	
64	ES-401 Form 9 and elsewhere	Job Content Errors	Change "Errors" to "Flaws".	Flaw is a more technically accurate and applicable word. Further, it separates this concept from the concept of candidate error.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
65	ES-401 E.2.e, first paragraph	Upon supervisory approval, generally at least 21 days before the examinations are scheduled to be given; the chief examiner will review the written examinations with the facility licensee in accordance with ES-201.	Upon supervisory approval, generally at least 45 days before the examinations are scheduled to be given; the chief examiner will review the written examinations with the facility licensee in accordance with ES-201. At least 10 days prior to the review meeting, form 401-9 will be supplied to the utility."	Align guidance with practice. Encourage examiner consistency since the actual 401-9 forms are not always provided to the facilities. Ten days allows sufficient time for the facility to review the comments and properly prepare for the meeting.
<b>ES-401N</b>				
66	All		Incorporate 401N guidance into 401	Having two nearly identical attachments, with duplicate forms, SRO-only guidance, etc. seems ill-advised since most changes to one have to be applied to both, risk of referring to the wrong section, etc.
67	See Above		Applicable comments to ES-401 should be applied to ES-401N	

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
<b>ES-402</b>				
68	ES-402 B	Administration of written	Last sentence should read "Generally, written exams are administered by the facility licensee in accordance with ..."	Align guidance with practice, it doesn't matter who writes the exam, the facility generally administers it.
69	C.1.g	Added regulation information	Remove the added words or make their intent clear.	The words that were added don't add clarity. What is the connection between "notice of hearing" and the facility sending a letter to withdraw applications? If there is an important point that needs to be made with respect to the withdrawal letter, the added material should be rewritten so that it is understandable.
<b>ES-403</b>				
70	ES-403 D.1.a	First paragraph	Change paragraph to match practice. No changes are made to the key or the exam without the chief's express consent.	D.1.a implies that the facility is making decisions regarding the acceptability of the post-exam comments or recommendations and adjusting the key based on these comments during the grading process. In reality, it doesn't happen this way.
71	ES-403 D.1.b Bullet 5	it's	Its	The incorrect form of "its" is used.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
<b>ES-501</b>				
72	ES-501 C.1.a	"The facility licensee shall refrain from communicating results of the written examination with the NRC until the operating examination has been administered to each applicant."	The facility licensee shall refrain from communicating results of the written examination with the NRC exam team until the operating examination has been administered to each applicant. Any issues which arise with the written exam prior to the completion of the operating test should be reported to and discussed with the regional branch chief.	Facilities need to have an NRC person to call if there are issues which need to be discussed and resolved.
73	ES-501 C.1.b	Changed "should" to "shall"	Remove section C.1.b	Will there ever be a time when C.1.b would really be applicable? It would not be possible to have an exam with no involvement from the facility due to direction elsewhere in the NUREG. It looks like the only real difference in intent between Section a and Section b is with respect to submitting applicant comments. Just make it required, since the facility always would send comments anyway, and remove C.1.b.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
74	ES-501 C.2.c second paragraph	"...the regional office should ask the facility to explain..."	Remove this section or at least this sentence.	The NRC reviews and approves the examinations that are proposed by the facility. Once approved, the NRC "owns" the examination. Since the level of involvement by the NRC is so significant, both parties are responsible for the quality of the content and both parties should have to answer why there are so many post-exam changes. Further, these questions shouldn't count against the facility in the 20% tally for the same reason.
75	ES-501, D.2	Review requirements	Preclude reviews completed by the same person. This seems to contradict D.3.a of this ES.	It is important to maintain independence. No one can independently check their own work.
76	ES-501 D.3.h	Clarification regarding applicants who take part of an exam	Change to ""If an applicant takes any part of a licensing exam and subsequently withdraws the application prior to exam completion, the applicant will receive a denial letter."	Edit for clarity.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
77	ES-501 E.1.b third bullet	"a copy of all JPMs..."	"a copy of the actual, marked-up JPMs..."	Sending clean, unmarked copies of the JPMs does not help the applicant understand their performance deficiency. This has been inconsistently applied in the past.
78	ES-501 E.1.b fourth bullet	"written...JPM..."	This sentence combines two ideas, it should be fixed.	As noted above, copies of actual JPM administered should be returned.
79	ES-501 E.2	"If an applicant requests...destroying..."	Remove or re-evaluate this.	NRC should not be destroying exam-related material until appeals/hearings are complete or the time allowed to request them is past.
80	ES-501 E.3.a	Evaluation of the acceptability of test material	Reduce administrative burden by limiting these activities to a bare minimum which communicates the needed information to the utility to fix future submittals.	It should not be necessary for the chief examiner to check, evaluate, calculate, fill out forms and generate paperwork simply to say "The exam did or did not meet our quality expectations when submitted." Just allow them the latitude to make that determination with the branch chief's approval and eliminate all of this overhead which doesn't improve the exam or make the process more effective or efficient.
81	ES-501 Attachment 6	"two new sample letters"	Attachment 6 only has one letter.	Typo
82	ES-501 Form 1	Line 7	Should line 7 mention preliminary results letters?	Clarification

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
<b>ES-601</b>				
83	ES-601 C. Scope	The SAT approach allows the NRC to conduct requalification examinations that are fundamentally consistent with existing facility-developed programs.	<p>The SAT approach allows the NRC to conduct requalification examinations that are fundamentally consistent with existing facility-developed programs.</p> <p>The NRC will consider such facility programs as acceptable and will follow licensee requalification procedures, not ES-601 – 604, for the conduct of examination activities.</p>	Facility requalification training programs which follow the uniform conditions outlined in NANT guidelines are considered in compliance with 10 CFR 55.59 for the use of SAT- based processes and NRC should therefore consider the content of ES-601 – 604 as not applicable.

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment	Justification
<b>Appendix C</b>			
84	B.3	Linked critical step performance with verifiable actions	<p>Remove this link</p> <p>The statement "In general, critical steps should consist of verifiable actions." is true but misleading. There are a variety of critical steps which are NOT verifiable actions but should still be used as the basis for JPM failure.</p> <p>If, for example, there is a procedure step to have a motor control center breaker closed or opened by a field operator, such as the case of isolating cold leg accumulators, the examinee cannot complete the task without having the field operator close the breaker. This is a critical step but NOT a verifiable action.</p> <p>If it is desired to put a link to verifiable actions in here, then the discussion needs to be more robust and contain some examples of critical steps which are NOT verifiable actions.</p>
<b>Appendix D</b>			
85	C.1	Scenario Overlap attribute	<p>Remove</p> <p>As noted previously, this should be done differently, preferably as a qualitative check by the facility/chief to verify overlap does not impact exam fairness/predictability.</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
86	C.2.j	The new "Note:" states "An unintentional RPS or ESF actuation does not equate to a failure to perform a CT."	This section needs to be re-written for clarity. It is not at all clear what we are intended to do with this information.	<p>It might equate and it might not. Saying "does not equate" does not mean "may or may not".</p> <p>It is then directly contradicted by the following underlined paragraph: "the critical aspect of an unintentional...RPS or ESF actuation is to ensure that they do not occur..."</p> <p>Further, the following paragraph describes a concept of Overall CTs which will require predicting how many of these theoretical RPS/ESF actuations will be prevented by proper operation of the control boards?</p> <p>For the examiner, it adds a layer of complexity and subjectivity that seems undesirable.</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
87	D.1.c Bullet at top of page D-16	Added details for elements of critical task performance standard.	<p>"If an applicant neglects to take an action or takes an incorrect action during the performance of a critical task 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 and its impact on the critical task. The measurable performance standard ....crew."</p> <p>Example: If, during the period of time that ESFAS pumps are required to be running to meet the critical task, an applicant takes an incorrect action and it corrected ..."</p>	<p>This section asks examiners to predict what action someone may have taken in the future and whether or not this previously <b>corrected</b> latent error <b>could have</b> impacted the outcome of the scenario.</p> <p>In this case, if not bounded in some way, the examiners are now relying on something that didn't actually happen and, therefore, cannot accurately project what may have happened without the crew intervention. It cannot be known with certainty what someone would have done or which of their own errors they would have corrected if that other candidate was just a little slower. There is too much subjectivity to make a licensing decision unless the action/inaction takes place during the actual performance of the CT.</p> <p>In the given example, there is no performance feedback. If the pump wasn't required until 30 minutes after the correction, the performer is deprived of performance feedback (which is required for a CT) from the plant. There was never any indication to the performer that his action/inaction had caused the plant to degrade since the condition where it matters hasn't happened yet. For this reason alone, these cannot be assigned as CTs unless they occur during CT performance.</p>

No.	NUREG Section	NRC Proposed Change/NEI Proposed Resolution/comment		Justification
88	D.2	Clarification regarding event classifications	State "EP classifications are not Critical Tasks because they do not provide performance feedback to the performer."	Clarification is confusing.

WORKING EXAM PREP CHECKLIST PROPOSAL, FORM ES-201-1

Proposed Target Date (current R. 11 date)	Current R. 11 #	Task Description (Changes/Additions in Red)  Items in <b>BOLD</b> are needed to allow facilities ample time to produce quality exams in a timely manner.
-330 (180)	1.	Examination administration date confirmed (C.1.a; C.2.a and b)
-300 (150)	2.	NRC examiners and facility contact assigned (C.1.d; C.2.f)
-300 (150)	3.	Facility contact briefed on security and other requirements (C.2.c)
-270 (150)	<b>4.</b>	<b>NRC developed written examination outline, ES-401-1/2 or ES-401N-1/2, and ES-401-3 or ES-401N-3, sent to facility contact (must be on exam security agreement) (C.1.e-f, C.2.h, C.3.d and e)</b>
-240 (150)	5.	Corporate notification letter sent (C.2.e)
-240 (120)	6.	Reference material due for NRC prepared exams, only (C.1.e; C.3.c; Attachment 3)
-150 (120)	7.	Revised written examination outline due including ES-401-1/2 or ES-401N-1/2, and ES-401-3 or ES-401N-3 and ES-401-4 of ES-401N-4 (C.1.e and f, C.3.d)
-150 (60)	8a.	For NRC-authored exams, written exams delivered to facility licensee for review and validation. (C.1.i)
-120 (90)	<b>8.</b>	<b>Operating examination outline(s) and other checklists due, including Forms ES-201-2, ES-201-3, ES-301-1, ES-301-2, ES-301-5, ES-D-1, as applicable (C.1.e and f; C.3.d) Presubmittal items due</b>
-105 (85)	9.	<b>Operating examination outline(s) reviewed by NRC and feedback provided to facility licensee (C.2.h; C.3.e). Not applicable for NRC prepared exams. Feedback provided on presubmittal items</b>
-90 (60)	10a.	<b>Proposed operating tests (or written exam, as agreed to by station and chief examiner) due</b>
-75 (45)	12a.	<b>Operating test (or written exam) reviews completed, feedback provided to licensee. (C.3.f)</b>
-75 (60)	10b.	<b>Proposed written exams (or operating tests, as agreed to by station and chief examiner) due</b>
-60 (45)	12b.	<b>Written exam (or operating tests) reviews completed, feedback provided to licensee. (C.3.f)</b>
-60 (60)	11.	Preliminary waiver/excusal requests due (C.1.m; C.2.i; ES-202)
-45 (21)	14.	<b>Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f and g)</b>
-45 (21)	15.	<b>Examinations reviewed with facility licensee (C.1.j and k; C.2.g and h; C.3.g)</b>
-30 (30)	13.	Preliminary license applications (NRC Form 398's) and waiver/excusal requests due (C.1.m; C.2.i; ES-202)
-30 (7)	20.	Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)
-21 (14)	17.	<b>Final approval of written examinations and operating tests by NRC</b>

WORKING EXAM PREP CHECKLIST PROPOSAL, FORM ES-201-1

		<b>supervisor (C.2.j; C.3.h)</b>
-21 (7)	18.	<b>Request facility licensee management feedback on the examination. (C.2 I)</b>
-14 (14)	16.	Final license applications due and Form ES-201-4 prepared (C.1.m; C.2.j and k; ES-202)
-7 (7)	19.	Final applications reviewed; 1 or 2 (if >10) applications audited to confirm qualifications /eligibility; and examination approval and excusal/waiver letters sent (C.2.k; Attachment 5; ES-202, C.2.f; ES-204)
-7 (7)	21.	Approved scenarios and job performance measures distributed to NRC examiners (C.3.i)

## **NEI Comments on NRC Project AIM Proposals**

### **ES-205- Reducing Generic Fundamentals Examination Offerings**

In SECY-16-0009, Recommendations Resulting from the Integrated Prioritization and Re-Baselining of Agency Activities, the NRC proposed reducing the number of NRC Generic Fundamental Exams (GFE) from four annually to two annually. This proposal was subsequently approved by the Commission in the Staff Requirements Memorandum for SECY-16-0009 dated April 13, 2016. While this initiative offers a reduction in cost for the development and implementation of GFE for the NRC there are several unintended consequences, to both the NRC and the industry. These consequences include necessitating license program start dates that decrease from 4 times per year to 2 times per year based on coordination with GFE exam dates. This would result in a compression of final NRC exam dates, affecting both NRC resources and utility resources since license classes will now conclude at the same approximate time twice a year vs. the current 4 times a year. This can add additional cost to the industry as there will be less opportunity to share resources across the industry and individual fleets for certification examination support which will increase the amount of overtime required by station personnel or will increase use of contractors to support the development of NRC exams. This attachment is intended to provide several potential solutions to mitigate these consequences and at the same time reduce generic fundamentals exam development and implementation cost for the NRC. Any of the options below or a combination of the options could be implemented by June 2017 if desired. This would allow for the NRC to give the December 2016 exam and the March 2017 exam which would meet the two proposed GFE administrations in the next fiscal year and have the industry take over the exams or have the 75 question RO exam cover all 14 items in 10 CFR 55.41.

#### **Industry Proposal:**

The Code of Federal Regulations (CFR) for operators' licenses is generic in nature as to the required contents of a station's license training program. In order to meet the CFR, a station must:

- Use a systems approach to training (SAT) to determine the training program content
- Administer written and operating examinations that contain a "representative selection of questions of the knowledge, skills and abilities needed to perform license operator duties" derived from the afore-mentioned SAT process and sampling specific items as defined in 10 CFR 55.41, 43, and 45.

10 CFR 55.41, 43, and 45 are specific with regard to reactor theory, the principles of heat transfer and fluid mechanics, and components. There is no specific regulatory requirement to conduct a stand-alone GF examination, as is current NRC practice. Guidelines from the Institute of Nuclear Power Operations (INPO) for the accredited initial licensed operator training program require training and evaluation on generic fundamentals topics. Therefore, it can be inferred that the NRC could rely on the station's SAT process to determine what additional fundamental knowledge is necessary for an operator. Additionally, through the site-specific training

program, candidates will gain all the practical fundamental knowledge necessary to operate the facility. For example:

- Through performing reactivity manipulations and manipulating the console controls required to operate the facility between shutdown and designated power levels (10 CFR 55.45(2)) a candidate demonstrates that they understand how to control reactivity effects.
- As part of being trained on normal operations in the simulator and classroom, a candidate demonstrates that they understand how to control the heat transfer and fluid mechanics that occur in various systems.

Eligibility requirements for entering the license training program are prescribed by NRC form 398 and defined by NUREG 1021. These documents describe the prerequisite knowledge and experience necessary to qualify to obtain an operating license. These requirements essentially require previous military power plant experience, or an engineering degree and nuclear plant experience. By requiring license candidates to have this education and experience, candidates likely have all of the practical math and science knowledge, with the exception of reactor theory, necessary to be competent operators. Any operational fundamental knowledge necessary should already be identified via the SAT process and built into the station's license program as required by the INPO guidelines. In essence, administering a separate fundamentals exam is redundant to the current SAT program and eligibility requirements.

With the aforementioned guidance in mind, there are several alternative solutions to the current method for meeting CFR requirements for license candidate fundamental knowledge evaluation. Any of the following options or a combination of the options could provide a better solution to reducing overall cost and at the same time ensuring the high standards to educate and qualify licensed operators for the ultimate goal of protecting the health and safety of the general public.

1. Eliminate the stand-alone GFE and include a representative sample of generic fundamental knowledge as part of the NRC license written examination.
2. Add generic fundamentals as part of the education requirement for eligibility to enter a license program and sample generic fundamental knowledge as part of the NRC license written examination.
3. Develop an on-demand examination for GFE maintained by either the NRC or the industry.

Option 1: Eliminate the standalone GFE and include a sample of generic fundamental knowledge as part of the NRC license written examination.

**Justification:** Operator Training programs are required by 10 CFR 55.4 to be based on a Systems Approach to Training. INPO ACAD 10-001, Guidelines for Initial Training and Qualification of Licensed Operators, contains guidance for the basis of the training program. This guidance includes the generic fundamental topics that are also contained in the Knowledges and Abilities (K/A) catalogs (NUREG 1122/1123) which link the topics to the 55.41

and 55.43 attribute as applicable. As such, this knowledge is 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.

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 topics are evaluated in the 50-question standalone Generic Fundamentals Examination, they are significantly oversampled considering the remaining topics are sampled in the 75-question Reactor Operator written examination.

To ensure that fundamentals are appropriately sampled for the licensing examination, the written examination outlines of ES-401 could be modified to prescribe fundamentals sampling, gearing questions toward operational relevance. The existing ES-401 could be modified to sample 3-5% of the 75 RO written questions based on the existing K/A catalog which would be in line with the percentage of 55.41 (b) (1) and (14) K/As. The other option would be to leave the written examination outline as is but require the examination developer to ensure that 3 to 5% of the questions require 55.41 (b) (1) and (b) 14) knowledge to correctly answer the question.

For example, the current K/A guidance allows for the evaluation of generic fundamental topics. Examples of K/A statements that test on 55.41(b) (1) and (14) are:

- Poison Effect
  - 001 CRD system K5.13 Knowledge of the following operational implications as they apply to the CRDS: "Effects of past power history on xenon concentration and samarium concentration"
  - 001 CRD system A2.06 Ability to (a) predict the impacts of the following malfunction or operations on the CRDS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: "Effects of transient xenon on reactivity"
  - Similar K/As in the CVCS, Nuclear Instrumentation, Inoperable/stuck rod, Control Room Evacuation, (numerous K/As in the Systems and Evolutions sections of the catalog mention Xenon)
- Criticality Indication
  - 015 Nuclear Instrumentation System K5.05 Criticality and its indications and K5.06 Subcritical multiplications and NIS indications.
- Reactivity Coefficients
  - 001 Control Rod Drive System K5.02 Application of differential rod worth and integral rod worth

- 001 Control Rod Drive System K5.82 Interpretation of differential and integral boron worth curves
- Thermodynamics and Fluid Mechanics
  - EPE 029 Anticipated Transient Without Scram (ATWS) EK1.01 Reactor knowledge of operational implications and/or cause and effect relationships as applied to ATWS for: nucleonics and thermo-hydraulic behavior
  - 013 Engineered Safety Features Actuation System A1.02 predict and/or monitor changes in Containment pressure, temperature, and humidity
  - EPE 074 Inadequate Core Cooling EA2.01 Ability to determine and/or interpret the following as they apply to Inadequate Core Cooling: Subcooling Margin

**Benefit:** NRC benefits would be the elimination of a redundant examination and reduction in the administration of requests for individuals to take the GFE. All CFR-required written examination requirements for the initial candidate can be met with one test – 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 standalone GFE, generic fundamentals would still be sampled on an NRC examination.

**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 for license candidates. This would result in program examinations, in addition to the final NRC exam, ensuring the mastery of fundamental topics.

**Change Required:** Changes to NUREG-1021 that may be required to implement this recommendation include:

- Revising ES-401 Preparing Initial Site-Specific Written Examinations, sample plan methodology and outline forms
- Deleting ES-205 Procedure for Administering the Generic Fundamentals Examination Program, 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, Written Examination Concepts

Option 2: Add generic fundamentals as part of the education requirement for eligibility to enter a license program and sample generic fundamental knowledge as part of the NRC license written examination.

**Justification:** Operator Training programs are required by 10 CFR 55.4 to be based on a Systems Approach to Training. 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 is accomplished through a combined effort from the NRC and INPO. INPO ACAD 10-001, *Guidelines for Initial Training and Qualification of Licensed Operators*, 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 1122/1123) 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 the Utility and INPO periodically review and assess training program content; specifically evaluating for training program compliance with the ACAD requirements. To meet CFR requirements, generic fundamentals knowledge will be evaluated in the accredited training program using the SAT process and will be examined as part of the 75 question NRC 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 – 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 standalone GFE, generic fundamentals would still be sampled on an NRC examination.

**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 for potential license candidates. This would result in program examinations, in addition to the final NRC exam, ensuring the mastery of fundamental topics.

**Change Required:** Changes to NUREG-1021 that may be required to implement this recommendation include:

- Revising ES-401 Preparing Initial Site-Specific Written Examinations, sample plan methodology and outline forms
- Deleting ES-205 Procedure for Administering the Generic Fundamentals Examination Program, 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, Written Examination Concepts Option 3 Develop an on-demand examination for GFE maintained by either the NRC or the industry.

**Justification:** Operator Training programs are required by 10 CFR 55.4 to be based on a Systems Approach to Training. INPO ACAD 10-001, Guidelines for Initial Training and Qualification of Licensed Operators, 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 1122/1123) 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.

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 Examination, 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 is currently thousands of NRC approved generic fundamental questions that could be used by a systematic examination software program to randomly select questions per a standard examination outline for utilities to administer to license candidates.

**Benefit:** NRC benefits would be the elimination of the development and administration of GFE and the ability for NRC initial examination administrations to be more levelized throughout a calendar year.

**Risk:** Marginal. There may be a potential increase in examination security issues.

**Risk Mitigation:** Evaluate any potential new vulnerability to examination issues and put in place additional measures as necessary to ensure examination security is maintained.

**Change required:** Changes to NUREG-1021 that may be required to implement this recommendation include:

- Revising ES-401 Preparing Initial Site-Specific Written Examinations, sample plan methodology and outline forms
- Deleting ES-205 Procedure for Administering the Generic Fundamentals Examination Program, 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, Written Examination Concepts

### **ES-501/502- Eliminating the Informal Appeal Process**

In SECY-16-0009, Recommendations Resulting from the Integrated Prioritization and Re-Baselining of Agency Activities, the NRC proposed eliminating the informal NRC staff review of individual reactor operator applicants' appeals on the validity of examination items. This proposal was subsequently approved by the Commission in the Staff Requirements Memorandum for SECY-16-0009 dated April 13, 2016. As noted in the cover letter, the proposed changes to the informal appeal process recommended by the Lessons Learned Task Force provide the corrective actions that will prevent recurrence of the issues identified by the ASLB. Specifically, the proposed changes to include greater independence in the appeal process do directly address the ASLB findings. Therefore, the informal appeal process should not be terminated and replaced with a longer period to address exam comments. Although the Commission voted in favor of this Project AIM initiative it does not appear that they would have been aware that enhancements in this process are being largely credited as corrective actions to prevent recurrence of the ASLB reversal. This proposal not only eliminates the LLRT's recommendations for enhancing the appeal process but, in our estimation, would increase the number of formal appeals which would erase any savings generated by this proposed cost-savings initiative.

NRC Operator Licensing headquarters currently reviews candidate appeal decisions made by the individual regions. This review process is not specifically required or outlined in NUREG 1021 and is, therefore, considered informal. However, there are numerous examples in which a regional appeal decision is overturned during subsequent headquarters review. This often happens in review of written exam question appeals, and such decisions can appropriately reverse a candidate's failing grade. The proposed revision to NUREG 1021 would require a candidate's further challenge of a regional appeal decision to be reviewed by the Atomic Safety and Licensing Board (ASLB). This change creates two issues:

1. Headquarters will no longer "backstop" regional appeal decisions through their current informal review. Headquarters staff that have the appropriate examiner qualifications and technical knowledge will no longer be included in the review of regional decisions. Headquarters decisions that currently result in overturning regional decisions will be eliminated, potentially resulting in further perpetuation of candidate appeals.
2. The limited amount of time and resources expended by headquarters personnel will increase markedly under the new proposal as regional and headquarters staff will now be involved in the ASLB review process through preparation and testimony to provide technical and examiner expertise to the board.