

# PUBLIC SUBMISSION

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**Docket:** NRC-2016-0006

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

**Comment On:** NRC-2016-0006-0001

Operator Licensing Examination Standards for Power Reactors; Draft NUREG for Comment

**Document:** NRC-2016-0006-DRAFT-0010

Comment on FR Doc # 2016-02244

## Submitter Information

*3/25/2016*  
*81FR 6301-1*

**Name:** Anonymous Anonymous

## General Comment

*5*

Reference Docket ID NRC-2016-0006 Attached are comments related to draft revision 11 of NUREG 1021. Attached is a marked up version of the Rev-11 document - only the affected/commented-on pages are attached. Also attached is the NEI review and comment document, which we endorse and concur with.

## Attachments

NEI comments

Draft NUREG-1021 R11 comments only

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RULES AND REGULATIONS  
SECTION  
1.05

**SUNSI Review Complete**

Template = ADM - 013

E-RIDS= ADM-03

Add= *m. Sahelty (mcs7)*  
*H. Kolb (tk)*

## NEI Comments on NRC Operator Licensing Lessons Learned Report

LLRT Rec.	NRC LLRT Recommendation	NEI Comment	NEI Recommendation
1.1	Discontinue the practice of restoring a point when two non-critical errors are offset by correctly performing another activity in the same rating factor."	NEI disagrees with this proposed change. The practice of restoring a point for 2 non-critical errors when a correct action off-sets an error should be continued. This guidance was elaborated upon in May of 2014 (ML14107A395), shortly after the Vogtle candidate decision in March of 2014 and then incorporated into NUREG 1021 Rev. 10 as a requirement, even though previous revisions of NUREG-1021 allowed this option. The point-back practice now compensates for the fact that a competency with 10 non-critical opportunities should not be treated the same as one with 4 non-critical opportunities by rewarding compensating performance, which the LOFG agrees with. Giving credit for proper correction of errors within a competency eliminated the concern that a single mistake in a competency is unrecoverable.	No change to NUREG-1021.
1.2	For simulator performance scoring, the range of scoring should be from 0 to 3 instead of 1 to 3. The passing threshold will remain 1.8.  Operator Licensing and Training Branch (IOLB) review, revise, and clarify the definition of critical task (CT).	NEI disagrees with this proposed change. This recommendation would have the unintended consequence of reducing reliability in grading, and will lead to both higher failure rates and an increase in the number of appeals similar to the one experienced at Vogtle. Furthermore, examiner bias toward (against) a candidate could easily be hidden by applying a "0" with the proposed criteria vs. a "1" in the current grading scheme.  In addition, changing the definition of a critical task contradicts years of written definitions in NUREG-1021 and guidance from owners groups and other sources that have functioned well. For example, inadvertently actuating RPS or ESFAS does not necessarily adversely challenge the safety	No change to NUREG-1021.

LLRT Rec.	NRC LLRT Recommendation	NEI Comment	NEI Recommendation
		<p>of the plant or the health and safety of the public, and therefore does not meet the age-old definition of a critical task.</p> <p>Regarding the 0-3 scale proposed change, NEI understands that the NRC reviewed the results of 740 exams conducted during 2013 and 2014. 62 of these exams resulted in failures; but when the proposed grading criterion was applied retrospectively, the number of failures increased to the range of 90-95, a 50% increase in failure rate. Nothing in the LLRT report indicates NRC believes that there are currently a significant number of licensed operators at the controls who are not considered competent, as this change would imply.</p>	
1.3	<p>There should be guidance for the exam team and for the review panel regarding post-exam CTs:</p> <ul style="list-style-type: none"> <li>• Wording to support the identification of post exam CTs should be in ES-302 and ES-303</li> <li>• Documentation in the ES that it is acceptable for scenarios to contain more than the target number of CTs.</li> <li>• OLMC-500 should be revised to prohibit a review panel from identifying and applying new CTs.</li> </ul>	<p>A review panel should not be afforded the opportunity to create a post-scenario critical task under any circumstance. It has been proven time and again that it is difficult, if not impossible, to recreate a scenario after the fact whether it is for examination purposes, scenario based testing purposes, etc. Furthermore, NEI disagrees with the need to have different definitions of a critical task for initial license and requalification purposes; a critical task is a critical task and recommendation 1.4 supports this position.</p>	No change to NUREG-1021.
1.4	<p>Examiners Standards be modified to state that a CT is only a CT as determined by the multi-factor definition regardless if it is or is not initially identified as one on Forms ES-D1 or 2.</p>	<p>NEI agrees. This recommendation supports the notion that a critical task is already defined and understood in NUREG-1021.</p>	Implement change as recommended.
1.5	<p>Examiner Standards be modified to limit the association of a performance deficiency to no</p>	<p>NEI agrees with the LLRT recommendation that the Examiner Standards be modified to limit the</p>	Implement change as recommended by the

LLRT Rec.	NRC LLRT Recommendation	NEI Comment	NEI Recommendation
	more than two rating factors.	association of a performance deficiency to no more than two rating factors. This recommendation should limit double jeopardy and prevent examiner bias toward a candidate. NEI disagrees with the recommendation of the OLIT that this change does not need to be made.	LLRT.
1.6	IOLB strongly establish and re-iterate expectations regarding Examiner Standards implementation and the regions must implement the program consistently.	NEI agrees and we note that while Regional consistency is very important, driving consistency down to the examiner level is key, as documented in the ASLB report.	Implement actions to promote alignment between IOLB and the regional offices.
1.9	An audit peer review program should be developed that performs a regional review utilizing cross-regional examiners with the intent to target specific focused items to evaluate areas that will identify differences and best practices among the regions.	NEI recommends that an audit peer review program include appropriate independent external individuals that do not have a day-to-day stake in the examination process. Such individuals would be uniquely suited to provide unbiased, fully-independent input into the health of the program.	As stated.
2.1	Waiver requests and decisions will be dispositioned in formal correspondence. Emphasize that licensees submit waivers early in process. Add wording to corporate notification letter.	NEI agrees with the need for formal correspondence for early communication of the likely need for a waiver. However a 60-day advance notification, while helpful in some instances, is not always early enough to support decisions during candidate selection. Early good-faith, albeit informal, communications have traditionally taken place prior to the start of an 18 – 24 month initial license program to avoid having a candidate reach the final stages of the program only to be denied a license based on the denial of a waiver submitted much later in the process. Such situations should be avoided. NEI proposes a change to NUREG-1021, ES-201 to encourage a submittal of a waiver request prior to commencement of initial operator license training to resolve any uncertainty around the acceptability of a candidate to enter the program. NRC review	Revise NUREG-1021, ES-201, ES-202, and/or ES-204 to allow earlier consideration of waivers to support the candidate selection process.

LLRT Rec.	NRC LLRT Recommendation	NEI Comment	NEI Recommendation
		of waiver requests prior to a candidate's entry in to the operator license training program simply formalizes current regulatory practice.	
2.2, 2.3, 2.4	<p>Establish a "marginal performance band" such as scoring between 80-84 on the written exam, scoring between 1.8 and 2.0 on any competency on the simulator exam, and achieving only 80% on the JPM portion. If an applicant fails a portion of the exam but scores above the marginal performance band in other portions then the Region may grant a waiver of the passed sections.</p> <p>Revise NUREG 1021 to be consistent with the words in 10 CFR 55.35 on the use of the word "excused." This is based on sufficient justification which is what the new marginal performance band is based on.</p> <p>Revise NUREG 1021 to clarify requirements of 10 CFR 55.35 and 10 CFR 55.47 with respect to waivers or excusal of examination requirements.</p>	<p>NEI does not agree with the concept of establishing a marginal performance band. By the nature of the operating exam, the potential exists for candidates to be evaluated using different simulator scenarios and JPMS, as opposed to the written exam where each candidate receives an exam based on their respective license level. In addition, candidates are assigned different evaluators. Due to the somewhat subjective nature of grading a dynamic performance evaluation and the differences in examiner tendencies, the suggested marginal performance band is not a valuable and reliable tool. Finally, neither the LLRT nor the OLIT reports presented a basis for the need to include a marginal performance band.</p>	No change to NUREG-1021.
3.3	<p>For any appeal, the affected region shall submit their review of the contested items via a formal memo from the Director of DRS to IOLB for consideration by the review team. If the appeal proposes a reversal of the original licensing decision then the affected region shall be afforded the opportunity to submit an additional written response articulating any further opposing view. This</p>	<p>NEI does not agree with this recommendation and believes that allowing the affected region to provide an additional written response for a failure reversal perpetuates the appeal process with the potential for introducing issues similar to those that resulted in the Vogtle candidate ASLB decision.</p>	No change to NUREG-1021.

<b>LLRT Rec.</b>	<b>NRC LLRT Recommendation</b>	<b>NEI Comment</b>	<b>NEI Recommendation</b>
	additional response shall be from the Regional Administrator to the Director NRR.		
3.6	Both the Examiner Standards and OLMC-0500 should contain guidance that documentation be handled in accordance with MD 3.4 and Inspection Manual Chapter (IMC) 0620, Inspection Documents and Records. The examiner standard should contain guidance that after the administrative review is completed and documented then pre-decisional drafts, email correspondence and other background information should be deleted. OLMC-0500 should contain guidance to create an "Administrative Review" ADAMS package to store documents required to satisfy MD 3.4. The team recommends rewriting OLMC-0500 to consider partitioning the OLMC into separate sections for each part of the exam and medical appeals.	NEI agrees that established records policies should be followed.	Implement change as recommended.
4.1	A re-examination following an allegation of conflicts of interest or bias shall be observed by a branch chief or other management official IAW IMC-0102, Oversight and Objectivity of Inspectors and Examiners at Reactor Facilities.	NEI agrees and recommends that the revised wording should be consistent with Recommendations 3.1 and 3.2 in that individuals involved, including the branch chief, should be independent and not involved in the original examination.	Revise NUREG-1021 as recommended.

### Changes from NUREG-1021, Revision 10

C.3.j, revised guidance to specify that the facility licensee assigns crew and examiners for the simulator operating test and develops the schedule for JPMs and scenarios. The NRC Chief examiner will review the schedule and make changes if necessary. Changes should no later than two weeks before the operating test start date. Based on a recommendation from OLIT Team 5.

Changed "should" to "shall" for notifying the program office if using surrogate operators contrary to the described conditions. Also added "if possible" at the end of the sentence in case the exam team cannot get in touch with the program office. The exam administration should not be delayed if the program office cannot be contacted. Deleted 4<sup>th</sup> paragraph regarding information that the same examiner should administer all portions of the exam since this practice is rarely followed. This is based on regional feedback.

Attachment 3, removed guidance that requires procedures and references to be "properly bound." This is no longer needed because of the capability to make electronic submittals.

D.1.a, clarified that an examiner who participated in the administration of any portion of an operating test or a denied excusal cannot be assigned to any portion of an operating test retake for an applicant.

D.2.b., added an additional bullet as a prohibited activity to develop exam bank questions if the intent is to use on the next NRC exam. This incorporates FAQ 401-32.

Attachment 1, Other Considerations,2., added guidance that specifies licensees may teach license applicants the general attributes associated with examination development in NUREG-1021 as long as specific examination aspects are not disclosed. Based on feedback from public.

Attachment 4, added guidance to the Sample Corporate Notification Letter that waiver or excusal requests should be submitted as early in the process as possible (normally 60 days) along with information stating verbal communications are not binding. These requests should be a formal written request with the NRC providing a formal response. Updated the reference to NUREG 1021, Rev.11. Also, added wording stating that the NRC will provide the written examination sample plan, if applicable. This incorporates FAQ 201.4.

Attachment 4, updated Paperwork Reduction Act Statement.

Form ES-201-1, Examination Preparation Checklist, Item 4, added that NRC developed written exam sample plans sent with the corporate notification letter at the 150 day point. Item 8, changed so that 60 day due date for proposed examinations and documentation applies to both facility licensee authored and NRC authored examinations. Added a new item 9 at 60 days noting that preliminary waiver/excusal requests are due and re-numbered the list below.

Form ES-201-2, Examination Outline Quality Checklist, added reference to ES-301 Section D.5 Specific Instructions for the "Simulator Operating Test" to the SIMULATOR item on the checklist. Added criteria in the GENERAL item to check for duplication and overlap between the current exam and the previous two NRC exams. Reference ROI 13-17R, ADAMS accession number ML14140A512.

### ES-202

Multiple changes made across this section because the NRC has discontinued the process of performing informal reviews of license application denials. An applicant can request an adjudicatory hearing once he or she is notified that his or her application has been denied via an Application Denial Letter.

B, revised section to match the wording in the regulation and removed duplicate references to the 1987 rule change and other minor editorial wording changes.

C.1.a, provided additional guidance to address excusals and deferrals and consolidated references to location and instructions for NRC Form 398 and 396. Revised the instructions for submitting excusals: the retake examination must occur within 1 year of the date that the applicant completed the original examination. Deleted the requirement for excusals to be requested with 1 year of the original exam. This is to match guidance in ES-204 for the same re-take exam process.

C.1.c, added guidance pertaining to which shift positions can get credit for reactivity manipulations and added an example of a reactivity manipulation. This incorporates FAQ 202.2 and 202.3.  
Added requirement that manipulations must be performed in accordance with a station approved procedure.

# Summary of Comments on NUREG 1021 R11 for Comment\_ab.pdf

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 Number: 1 Author: x10125 Subject: Highlight Date: 2/10/2016 5:23:30 PM -06'00'  
the 4th paragraph (from the Rev 10 version) was deleted

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<b>Changes from NUREG-1021, Revision 10</b>	
	C.1.c, deleted this line, <i>For ROs applying for an SRO license, certification that the operator has successfully operated the controls of the facility as a licensed operator shall be accepted as evidence of having completed the required manipulations</i> based on input regional offices that this causes confusion since SRO Upgrade applicants are not required to fill out the block of NRC Form 398 for Significant Control Manipulations in accordance with the instructions for NRC Form 398.
	C.1.e, provided guidance for submitting preliminary excusal requests at least 60 days before the re-take examination. Revised to coincide with guidance in ES-201, to submit requests as early as possible.
	C.1.g, eliminated the option of an informal staff review for a license application denial and added information that the applicant can request an adjudicatory hearing.
	C.2.a, added guidance that applies to deferrals and excusals. Removed requirement to communicate with OGC via telephone and/or email and added a requirement that the communication must be documented. How it is documented is up to the individual. Removed guidance that specifies the NRC will not entertain a re-application request if a hearing is in progress. The re-application process is tied to the denial date and not dependent upon hearing results.
	C.2.d, added reference to ES-502 in addition to ES-501 for actions the region takes in the event of a license application denial after license examination due to training and/or experience requirements not being met.
	D.1.a, revised RO eligibility requirements to be consistent with current NANT guidelines.
	D.2.a, editorial change to move info from b. to D.2.a. (4). Also revised SRO requirements to be consistent with current NANT guidelines.
	D.3.a, removed requirement for an LSRO to have RNPPE and just have experience consistent with current NANT guidelines.
	Attachment 1, removed guidance related to requesting an informal staff review for reconsideration of the application denial. Letter now provides guidance for requesting an adjudicatory hearing only.
<b>ES-204</b>	
	ES-204 title changed to add reference to excusals.
	B, added guidance to address excusals.
	C.1.a, added guidance to address excusals and to attach supporting documentation for justification. Added examination categories for excusals and waivers that are used on NRC Form 398 for specifying type of written examination and operating test waiver/excusals.
	C.1.b, added guidance to address excusals.
	C.2.a, added guidance to address excusals.
	C.2.b, added guidance to address excusals.
	C.2.c, added guidance to address excusals.
	C.2.d, added guidance to address excusals. Deleted the requirement for the program office to be on distribution for excusal and waiver requests since documents are in ADAMS. Reference ROI 14-04, ADAMS accession number ML14051A189.
	C.2.e, added guidance to address excusals. Added statement regarding OGC's direction on preliminary applications: The final decision on whether to grant or deny a waiver or excusal request will be documented on the applicant's official (not preliminary) NRC Form 398. This decision will not be provided until a final application is submitted.
	C.2.f, added guidance to address excusals.
	C.2.h, added new item to list for acceptance of group waivers or deferrals for special situations that apply to more than one applicant.
	D, added excusal to the heading.

- f. The examination outlines and examinations shall be prepared in accordance with the guidelines in ES-301, ES-401, ES-401N, and ES-701, as applicable. The NRC staff will prepare the written examination outline for both NRC and licensee developed examinations. The proposed outlines and examinations shall cover all portions of the license examination (written, dynamic simulator, and walk-through) at all license levels relevant to the applicants (RO, SRO, and limited SRO) to be tested.

A facility supervisor or manager shall independently review the examination outline(s) and the proposed examination(s) before they are submitted to the NRC regional office in accordance with Item (g), below.

In conducting this review, the facility supervisor or manager shall use Forms ES-201-2, "Examination Outline Quality Checklist"; ES-301-3, "Operating Test Quality Checklist"; ES-301-4, "Simulator Scenario Quality Checklist"; and ES-401-6 or ES-401N-6, "Written Examination Quality Checklist."

- g\*. Pursuant to 10 CFR 55.40(b)(3), an authorized representative of the facility licensee shall approve the required examinations and tests before they are submitted to the NRC regional office for review and approval. Power reactor facility licensees must receive Commission approval of their proposed written examinations and operating tests. <sup>1</sup>The facility-approved initial examination(s) and tests shall be submitted to the NRC regional office with a cover letter signed by the facility representative. The materials must be complete and ready-to-use to facilitate a thorough review by the region.
- h\*. In its examination submittal to the NRC, the facility licensee (or its contractor) shall provide the following information for each test item proposed for use as part of the written examination and/or the operating tests:
- State the source of each item (e.g., is the item taken directly, without changes, from the facility licensee's or **any** other bank; is the item a modified version of a bank item; or is the item new?). <sup>2</sup>Facility licensees are encouraged to identify those bank items that were used on an NRC license examination at the facility by indicating the examination location and year administered.
  - For those items that were derived by modifying existing bank items <sup>3</sup>in any way, note the changes that were made or submit a copy of the item from which it originated.
- i. <sup>4</sup>If the NRC staff prepared any portion of the examination, the NRC regional office will provide a copy of the applicable written examination(s) and operating test(s) to the facility reviewers after they sign the security agreement (Form ES-201-3) and at least 60 days before the exam date. The facility reviewers should make their comments directly on the examination(s), return the marked-up copies to the NRC's Chief examiner, and ensure that he or she understands their comments and recommendations. The facility reviewers may retain a copy of the applicable marked-up examination(s), subject to the physical security considerations in Attachment 1.

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- I** Number: 1 Author: x10125 Subject: Highlight Date: 3/16/2016 2:41:15 PM  
Facility Rep sign the submittal letter, not the senior site representative? This is inconsistent with most licensee docket correspondence.
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- I** Number: 2 Author: x10125 Subject: Highlight Date: 2/9/2016 5:23:48 PM -06'00'  
If there isn't any reduction in review of the previously approved exam material, then there isn't any point in reporting whether or not they were used on previous NRC-approved exams. This creates questions about the validity of previously approved materials when the subsequent examiners grade a question as "unsat" - this also presents more room for inconsistencies between examiners and a moving target for licensee exam writers.
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- I** Number: 3 Author: x10125 Subject: Highlight Date: 2/9/2016 5:19:53 PM -06'00'  
adding "in any way" creates unnecessary paperwork. doesn't meet the intent of "modified."
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- I** Number: 4 Author: x10125 Subject: Highlight Date: 2/9/2016 5:32:53 PM -06'00'  
This is fine, but there is no description of the process to adjudicate the licensee's comments for NRC-prepared exam materials. These should follow the same process of revision and approval by the facility representative as licensee-approved exam materials.

This is responded to in paragraph K below.

- d. The relevant NRC regional office may negotiate earlier due dates with the facility contact, but should refrain from advancing the dates if it is unlikely that the review will begin promptly after the material arrives in the regional office. The regional offices should also keep the facility contact informed of the dates by which the region expects to provide its comments regarding the licensee's submittals.
- e. The NRC regional office shall normally issue a letter confirming the arrangements no later than 150 days before the examination begins. The letter should be addressed to the person at the highest level of corporate management who is responsible for plant operations (e.g., Vice President of Nuclear Operations). Attachment 4 is an example of such a letter; the exact wording may be modified, as necessary to reflect the situation.
- f. Approximately 5 months before the scheduled examination, the NRC regional office will assign the required number of examiners to develop, prepare for, and administer the examination as arranged with the facility licensee. The regional office will also designate a chief examiner to coordinate the examination project with the facility licensee and other examiners assigned to the examination. When making assignments, the regional office should consider each examiner's certification status, other examination commitments, possible conflicts of interest (as discussed in Section D of this examination standard), and general availability.

Once the facility licensee has begun preparing the examination, the regional office shall avoid changing the chief examiner assignment unless absolutely necessary. If a change is unavoidable, the responsible supervisor shall attempt to minimize the impact on the facility licensee.

Regional management should try to assign a sufficient number of examiners so that no examiner will have to administer more than four complete simulator operating tests per week.

- g. **All assigned examiners should attend onsite validation activities if possible.** This is the most efficient and effective means for examiners to become familiar with examination materials and to provide the chief examiner with feedback on the quality of each component of the operating tests. It also serves to orient new examiners with the facility, or to refresh examiners who have previously visited the facility with site-specific details, such as plant layout and simulator operation. There may be circumstances, such as retake operating tests, where validation activities can be conducted onsite just prior to the scheduled administration date. This alternative to a separate validation week minimizes agency costs and the impact on facility licensee training activities.

For those assigned examiners who are unable to participate in onsite validation activities, the regional office should determine if a separate preparatory site visit is necessary and appropriate. When making a decision, the regional office should carefully weigh the costs and benefits associated with each additional trip to the facility. The regional office should also consider such factors as the experience of the assigned examiners, the quality of the facility licensee's examinations (if applicable), and the status of the simulation facility (e.g., is it new or recently upgraded?).

- h. The responsible regional supervisor will review the examination outlines and the draft examinations and evaluate any recommended changes and corrections

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Not previously done. could have had an impact on the administration of JPMs.

No clear guidance on the process if all examiners do not attend. The second paragraph provides another softened tolerance to deviate from this recommendation. Also, having more than one onsite validation/preparatory visit adds cumulative impact for the licensee and additional expense for both licensee and the NRC.

Facility: \_\_\_\_\_ Date of Examination: \_\_\_\_\_

Developed by: Written: Facility  NRC  // Operating Facility  NRC

Target Date*	Task Description (Reference)	Chief Examiner's Initials
-180	1. Examination administration date confirmed (C.1.a; C.2.a and b)	
-150	2. NRC examiners and facility contact assigned (C.1.d; C.2.f)	
-150	3. Facility contact briefed on security and other requirements (C.2.c)	
-150	4. 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)	
-150	5. Corporate notification letter sent (C.2.e)	
-120	6. Reference material due for NRC prepared exams, only (C.1.e; C.3.c; Attachment 3)	
-120	<b>1</b> 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)	
-90	8. 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)	
-85	9. 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.	
-60	10. Proposed examination (including written, JPMs and scenarios, as applicable), supporting documentation (including Forms ES-301-3, ES-301-4, ES-301-5, ES-301-6, and ES-401-6, ES-401N-6, and any Form ES-201-2, ES-201-3, ES-301-1, or ES-301-2 updates), and reference materials due (C.1.e, f, g and h; C.3.d)	
-60	11. Preliminary waiver/excusal requests due (C.1.m; C.2.i; ES-202)	
-45	12. Written exam and operating test reviews completed. (C.3.f)	
-30	13. Preliminary license applications (NRC Form 398's) and waiver/excusal requests due (C.1.m; C.2.i; ES-202)	
-21	14. Examination approved by NRC supervisor for facility licensee review (C.2.h; C.3.f and g) and	
-21	15. Examinations reviewed with facility licensee (C.1.j and k; C.2.g and h; C.3.g)	
-14	16. Final license applications due and Form ES-201-4 prepared (C.1.m; C.2.j and k; ES-202)	
-14	17. Written examinations and operating tests approved by NRC supervisor (C.2.j; C.3.h)	
-7	18. Request facility licensee management feedback on the examination. (C.2.l)	
-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	20. Proctoring/written exam administration guidelines reviewed with facility licensee (C.3.k)	
-7	21. Approved scenarios and job performance measures distributed to NRC examiners (C.3.i)	

\* Target dates are based on facility-prepared examinations and the examination date identified in the corporate notification letter. For planning purposes and may be adjusted on a case-by-case basis in coordination with the facility licensee.

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Number: 1 Author: x10125 Subject: Highlight Date: 2/10/2016 8:03:05 AM -06'00'

What is this item? It is new, and not called out in the summary of changes. It creates a new requirement without any direction with a 120-day due date. It is not supported by the references (C.1.e and f). The summary of changes at the beginning of the document does not call out this item as new.

experience. Applicants affected by those guidelines can use the revised NRC Form 398 to document the details of their experience. This will minimize the potential for misunderstanding and the need to seek additional information.

### C. Responsibilities

The regulatory requirements associated with the license application process are detailed in Subpart D, "Applications," of 10 CFR Part 55, "Operators' Licenses," while the medical requirements for license applicants and licensed operators appear in Subpart C, "Medical Requirements." NRC staff and license applicant should refer to these requirements as necessary when preparing and reviewing license applications.

#### 1. Applicant/Facility Licensee

- a. To apply for an RO or SRO license, an applicant must submit NRC Form 398, and NRC Form 396, "Certification of Medical Examination by Facility Licensee." The application is not complete until both forms are filled out, signed by the appropriate personnel, and received by the NRC. Detailed instructions for completing NRC Form 398 and Form 396 are provided with each form. Additional instructions regarding waivers, deferrals, or excusals of training, experience, and examination requirements are provided in ES-204. NRC Forms 396 and 398 are available on the NRC's operator licensing Web page at <http://www.nrc.gov/reactors/operator-licensing/licensing-process.html>.

If the applicant is reapplying following a license denial, 10 CFR 55.35 applies, and the applicant must complete and submit a new Form 398. A new Form 396 may not be required as discussed below. The applicant may file the second application 2 months after the date of the first final denial, a third application 6 months after the date of the second final denial, and successive applications 2 years after the date of each subsequent denial. Each new Form 398 shall describe the extent of the applicant's additional training since the denial and shall include a certification by the facility licensee that the applicant is ready for reexamination

If the applicant previously passed either the written examination or the operating test, he or she may request to be excused from re-examination on that portion of the licensing examination. <sup>1</sup>Such excusals are limited to the first re-application and the corresponding retake examination must take place within 1 year of the date on which the applicant completed the original examination. The NRC staff will also consider written examination waivers for ROs in good standing who prefer to take only the 25-question, SRO portion of the written examination when they apply to upgrade their licenses. Refer to ES-204 for a more detailed discussion of these and other waiver or excusal criteria. Prior to licensing, every applicant must have a complete medical examination that meets the guidelines in the applicable version of ANSI/ANS 3.4, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants," as endorsed by RG 1.134, "Medical Evaluation of Licensed Personnel at Nuclear Power Plants." <sup>2</sup>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. However, if more than 6 months have passed since the date of

**1** Number: 1 Author: x10125 Subject: Highlight Date: 2/10/2016 12:27:36 PM -06'00'

Subtle change, but 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. Recommend leaving this section as it was in Revision 10: Time from original exam to application/request for waiver/excusal is 1 year.

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There should be an additional provision for SRO-Upgrade candidates that have a current RO license. They 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.

<http://www.nrc.gov/site-help/e-submittals/contact-us-eie.html>, or writing to the Office of the Chief Information Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Forms that have only a single signature, such as NRC Form 396, may be submitted electronically using an electronic digital signature. However, forms with multiple signatures, such as NRC Form 398, must rely on handwritten optically scanned signatures, because of the limited digital signature capability of the EIE system. For any textual documents submitted in an optically scanned format, please note that Searchable Image (Exact) PDF is required, to preclude optical character recognition errors. When sending these forms via EIE, facility licensees are encouraged to follow up with a phone call or e-mail message to the operator licensing assistant in the regional office to ensure the forms are received.

The facility must also submit a written request to administer the written examination and operating test to the applicant. This request can be considered met when receiving the official signed applications (Form 398's), usually with a cover letter, from the licensee for the individuals that are scheduled to take the initial licensing examinations.

- g. When the NRC's regional office denies a license application, the applicant need not accept the denial. The applicant may request an adjudicatory hearing in accordance with 10 CFR 2.103(b)(2) within 20 days from the date of the denial letter. Further action will be taken in accordance with ES-502.
- h. The facility licensee is expected to inform the NRC's regional office in writing if it wishes to withdraw an application before the licensing process is complete.

## **2. NRC Regional Office**

- a. The NRC's regional office shall review preliminary applications as soon as possible after they are received. In that way, the regional office can process the medical certifications, evaluate and resolve any waiver/deferral/excusal requests in accordance with ES-204, and obtain from the facility licensee any additional information that might be necessary in order to support the final eligibility determinations.

With regard to medical certifications, the regional office shall forward the applicant's NRC Form 396 and supporting medical evidence to the NRC's contract physician for evaluation any time the examining physician recommends that the NRC should issue a restricted license to the applicant, that the NRC should grant the applicant a waiver (exception) of any requirement set forth in the applicable ANSI/ANS standard, or that the NRC should change an existing restriction (by checking any of blocks A.2 to A.10 on Form 396). If, on the date of the licensing examination, the NRC's physician is still reviewing an applicant's medical certification but there is no reason to expect that the physician will disqualify the applicant, the NRC's regional office should allow the applicant to take the examination, with the understanding that the NRC will withhold the license until the medical certification is approved.

Before entering the applicants' data in the operator licensing tracking system, the NRC's regional office shall verify that none of the applicants' names appear on the

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Why was the informal staff review of the denial removed? No explanation is given.

list of "Escalated Enforcement Actions Issued to Individuals." The regional office shall check with the appropriate contact in the Office of Enforcement to verify and document that the information on the subject individuals is current before using the information on the list to deny a licensing action.



The regional office will verify that the applicant has successfully passed the GFE, if required, and review the data on NRC Form 398 to ensure that it is complete.

Affirmative responses to the "Power Reactor Operator Training Program" questions on NRC Form 398, indicate that the applicant has successfully completed a Commission-approved, SAT-based training program that (1) meets the education and experience requirements outlined by the NANT and (2) uses a simulation facility acceptable to the Commission under 10 CFR 55.45(b). If the facility licensee checks "yes" in response to these items, the licensee need not complete "Training," or "Experience Details," sections on NRC Form 398, except as noted below, and the regional office may accept the application without further review.

The regional office will verify that new applications include at least five significant control manipulations affecting reactivity or power level in the "Significant Control Manipulations" item of NRC Form 398 (refer to Section C.1.c).

As noted in the instructions on NRC Form 398, certified instructors (who may not have the requisite responsible nuclear power plant experience (RNPE) defined in RG 1.8, Revision 3) seeking an SRO license must complete the "Experience Details" section. Moreover, any exceptions or waivers from the education and experience requirements outlined in the NANT guidelines must be explained in the "Comments" section.

If an applicant checks "no" in response to the "Power Reactor Operator Training Program" questions, provides information that is not required, or indicates that exceptions or waivers have been taken, the regional office shall review the application against the specific eligibility requirements and commitments applicable to the facility licensee and shall refer any eligibility issues (e.g., any failure to meet the minimum guidelines established by the NANT or RG 1.8, Revision 3) and questions to the NRR/NRO operator licensing program office for resolution.

If the applicant is documenting military experience "in a position" equivalent (or superior) to a licensed RO at a military reactor (e.g., propulsion plant watch officer, reactor operator, engineering officer of the watch, propulsion plant watch supervisor, or engineering watch supervisor), then objective quality evidence must be supplied to confirm the duration an applicant was "in a position" as described above and not just the duration of the applicants overall service time. This evidence need only indicate the dates that the applicant was qualified in the position that is being evaluated for experience.

If the applicant is reapplying after a previous examination failure and license denial, the regional office shall evaluate the applicant's additional training to determine if the facility licensee made a reasonable effort to remediate the deficiencies that caused the applicant to fail the previous examination.

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These changes are not included in the summary changes pages at the beginning of this document.

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duplicate "in"

conducted under the supervision of licensed personnel. This time should not count toward the 4-year onsite experience specified in Item D.1(a)(1) above.

- (2) The applicant should complete an RO training program that is established and maintained using a systems approach to training.
- (3) The applicant must manipulate the controls of the reactor or a plant-referenced simulator that meets the requirements of 10 CFR 55.46(c) during five significant changes in reactivity or power level (refer to 10 CFR 55.31(a)(5) and Section C.1.c above). Every effort should be made to perform at least some of the manipulations on the actual plant and to diversify the reactivity and power changes for each applicant.

c. Education

The applicant should have a high school diploma or equivalent.

2. **Senior Reactor Operator**

a. Experience

- (1) A non-licensed (i.e., instant SRO) applicant should have a minimum of 18 months of RNPPE, as defined in RG 1.8. At least 6 months of experience should be on-site for which the applicant seeks a license and should not include any of the time spent in the control room as an extra person on shift.
- (2) Applicants for an SRO license who do not hold a bachelor's degree in engineering or the equivalent should have held an operator's license and should have been actively involved in the performance of licensed duties for at least 1 year at the site or a facility of the same vendor and vintage, 1.5 years at a comparable (BWR/PWR) or non-comparable facility, or have at least 2 years spent in a position that is equivalent (or superior) to a licensed RO at a military reactor (e.g., propulsion plant watch officer, reactor operator, engineering officer of the watch, propulsion plant watch supervisor, or engineering watch supervisor). The 2 years in a position equivalent to a licensed RO at a military reactor should be during the time the individual is qualified in the position that is being evaluated for experience. Maintaining "active status" for an operator's license under 10 CFR 55.53(e) is sufficient to satisfy this experience guideline.
- (3) During the years of responsible nuclear power plant experience, the applicant should participate in reactor operator activities at power levels greater than 20 percent for at least 6 weeks
- (4) The eligibility of equipment operators, plant technicians, and non-degreed licensed operator instructors, who do not satisfy the strict definition of RNPPE and might otherwise be disqualified, will be evaluated on a case-by-case basis. The NRR/NRO operator licensing program office will assess their experience to determine the degree of equivalence and amount of credit to be granted.

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There is no longer a 1-year requirement above. This was changed from Rev 10, and this paragraph needs to be updated to match the language to avoid confusion. (paragraph D.1.a.1 only requires 6 months)

RC etter ead  
(date)

(Applicant's name)  
(Street address)  
(City, State, ZIP code)

Dear (Name):

This is to inform you that your application, dated (date), for a (reactor operator, senior reactor operator, or limited senior reactor operator) license, submitted in connection with (facility name), is hereby denied.

(Region to discuss deficiencies and which part of Title 10 of the *Code of Federal Regulations* (10CFR) 55.31, "How to Apply," Examination Standard ES-202, U.S. Nuclear Regulatory Commission (NRC) -approved facility training program, or Regulatory Guide 1.8 was involved.)  
When you have met the requirements, you may submit another application.

If you do not accept this denial of your application, you may, within 20 days of the date of this letter, request an adjudicatory hearing under 10 CFR 2.103(b)(2). Under 10 CFR 2.307(a), you may request an extension of the time limits if you can show good cause.

If you request an adjudicatory hearing under 10 CFR 2.103(b)(2) based on the denial contained in this letter, submit your request electronically through the NRC's E-Filing system in accordance with the requirements of 10 CFR 2.302(a) through (g).

10 C.F.R. 2.302(a) states:

- (a) Documents filed in Commission adjudicatory proceedings subject to this part shall be electronically transmitted through the E-Filing system, unless the Commission or presiding officer grants an exemption permitting an alternative filing method or unless the filing falls within the scope of paragraph (g)(1) of this section (i.e., information that may not be transmitted electronically for security or other reasons).

In addition, 10 days before the date your request for hearing is due, you must request a digital ID certificate from the NRC in order to access the Electronic Information Exchange (EIE) system. The instructions for obtaining a digital certificate are found in 10 CFR 2.302(f) and on the NRC Web site at: <http://www.nrc.gov/site-help/e-submittals.html>.

Adjudicatory hearings are conducted under 10 CFR, Part 2, Subpart C. Specifically, 10 CFR 2.309 sets forth the requirements for hearing requests and contentions. 10 CFR 2.309(f) sets forth the requirements for an admissible contention. Briefly, an admissible contention must: provide a specific statement of law or fact to be raised or controverted; provide a brief explanation of the basis for the contention; demonstrate that the issue raised in the contention is within the scope of the proceeding; demonstrate that the contention is material to the findings that the NRC must make to support the denial of the license; provide a concise statement of the alleged facts or expert opinions which support your position and on which you intend to rely, together with references to specific resources and documents you intend to rely on; and, provide sufficient information to show that a genuine dispute exists with the NRC staff on a material issue of law or

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Why was the informal staff review of the denial removed? No explanation is given.

and the applicant otherwise meets NRC requirements (e.g., waiver of some training requirements for applicants previously licensed at a comparable facility).

- c. The medical data in support of NRC Form 396 are normally good for 6 months from the date of the medical examination to the date a person applies for an RO or SRO instant license. For re-applications (e.g., following a license denial or withdrawal of an application, or to request reinstatement of a terminated license) or for an examination which is delayed from its originally scheduled date, the NRC regional office may grant waivers extending the 6-month period, provided that the date of the original medical examination is within 24 months of the anticipated licensing date and "Comments," section of NRC Form 398 certifies that the applicant has not developed any physical or mental condition that would be reportable under 10 CFR 55.25, "Incapacitation because of disability or illness."<sup>1</sup> For renewal and SRO upgrade applicants, the medical examination documented on NRC Form 396 is good for 2 years from the date of the medical examination.

Waivers/exceptions and license conditions/restrictions that might be requested if an applicant does not meet the medical standards in the applicable version of ANSI/ANS 3.4, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants," will be coordinated with the NRC contract physician as discussed in ES-202.

- d. Substitutions allowed by Regulatory Guide (RG) 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," are not considered to be waivers and, therefore, do not require approval. For example, substitution of related technical training for up to 1 year of experience for an SRO is not a waiver. However, training for the examination applied for may not be counted as related technical training.
- e. If the facility licensee certifies that the applicant has successfully completed a training program accredited by the Institute of Nuclear Power Operations using an acceptable simulation facility, the region may waive the requirement for 10 startups on an operating reactor, which is typically required by NRC-approved cold license training programs. Cold license requirements will be met in accordance with NRC endorsed NEI 06-13A, "Template for an Industry Training Program Description."
- f. For those applicants who are unable to meet the requirement for 6 weeks on shift at greater than 20 percent power (because of extended plant shutdowns or other extraordinary circumstances), the NRC regional office may waive this requirement upon application if the following criteria are satisfied:
- (1) Facility training objectives for the desired licensed position have been developed using a properly validated job task analysis.

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This is slightly different than the guidance in ES 202 C.1.a, which requires that all applicants obtain a physical within 6 months of application. Recommend leaving this as-is, and adding this guidance in ES 202 above.

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**ES-301**  
**PREPARING INITIAL OPERATING TESTS**

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**A. Purpose**

All applicants for reactor operator (RO) and senior reactor operator (SRO) licenses at power reactor facilities are required to take an operating test, unless it has been waived in accordance with Title 10 of the Code of Federal Regulations (10 CFR) 55.47, "Waiver of Examination and Test Requirement." (Refer to ES-204, "Processing Excusals and Waivers Requested by Reactor Operator and Senior Reactor Operator Applicants.") The specific content of the operating test depends on the type of license for which the applicant has applied.

This standard describes the procedure for developing operating tests that meet the requirements of 10 CFR 55.45, including the use of reactor plant simulation facilities and the conduct of multi-unit evaluations.

**B. Background**

To the extent applicable, the operating test will require the applicant to demonstrate an understanding of, and the ability to perform, the actions necessary to accomplish a representative sampling of the 13 items identified in 10 CFR 55.45(a). (All 13 items do not need to be sampled on every operating test). In addition, the content of the operating test will be identified, in part, from learning objectives contained in the facility licensee's training program and information in the final safety analysis report, system description manuals and operating procedures, the facility license and amendments thereto, licensee event reports, and other materials that the Commission requests from the facility licensee.

The structure of the operating test is dictated, in part, by 10 CFR 55.45(b). Specifically, that requirement states that the test will be administered in a plant walk-through and in either a simulation facility that the Commission has approved pursuant to 10 CFR 55.46(b), a plant-referenced simulator that conforms to 10 CFR 55.46(c), or the plant, if approved by the Commission under 10 CFR 55.46(b).

The walk-through portion of the operating test consists of two parts ("Administrative Topics" and "Control Room/In-Plant Systems"), each of which focuses on specific knowledge and abilities (K/As) required for licensed operators to safely discharge their assigned duties and responsibilities. The individual walk-through examinations are commonly referred to as Job Performance Measures (JPMs) and these two terms are used interchangeably throughout this NUREG. The second major portion of the operating test (the "Simulator Test") is administered on a U.S. Nuclear Regulatory Commission (NRC)-approved or plant-referenced simulator. Unless specifically excused or waived in accordance with ES-204 and documented on the "List of Applicants" (Form ES-201-4), each license applicant must complete the entire operating test.

Each part of the operating test is briefly described below. Section D of this standard provides detailed instructions for developing each part. Procedures for administering and grading the operating test are contained in ES-302, "Administering Operating Tests to Initial License Applicants," and ES-303, "Documenting and Grading Initial Operating Tests," respectively.



The fourth topic, "Emergency Plan," evaluates the applicant's knowledge of the facility's emergency plan, including, as appropriate, the responsibility of the RO or SRO to decide whether the plan should be executed and activities/duties assigned under the plan. The following subjects are examples of the types of information that could be evaluated under this topic:

- lines of authority during an emergency
- operator responsibilities during an emergency
- emergency plan procedures
- emergency action levels and classifications
- emergency facilities
- emergency communications
- emergency protective action recommendations
- security event procedures (non-safeguards information)

The "Administrative Topics" are administered in a one-on-one, walk-through format in accordance with ES-302 and graded in accordance with ES-303.

## 2. **"Control Room/In-Plant Systems"**

This part of the walk-through operating test is used to determine whether the applicant has an adequate knowledge of plant system design and is able to safely operate those systems. This part implements the requirements of items 3, 4, 7, 8, and 9 identified in 10 CFR 55.45(a) and encompasses several types of systems, including primary coolant, emergency coolant, decay heat removal, auxiliary, radiation monitoring, and instrumentation and control.

This part of the walk-through focuses primarily on those systems with which licensed operators are most involved (i.e., those having controls and indications in the main control room). To a lesser extent, it also ensures that the applicant is familiar with the design and operation of systems located outside the main control room. The applicant's knowledge and abilities relative to each system are evaluated by administering JPMs and, when necessary, specific followup questions based on the applicant's performance of each JPM.

This part of the operating test is administered in a one-on-one, walk-through format in accordance with ES-302 and graded in accordance with ES-303.

## 3. **"Simulator Operating Test"**

This part of the operating test implements items 1-9 and 11-13 of 10 CFR 55.45(a). This is the most performance-based aspect of the operating test and is used to evaluate the applicant's ability to safely operate the plant's systems under dynamic, integrated conditions.

The simulator test is administered in a team format with up to three applicants (or surrogates) filling the RO and SRO license positions (as appropriate) on an operating crew. (Refer to ES-201, "Initial Operator Licensing Examination Process," for additional guidance on crew composition and ES-302 for test administration instructions.) This format enables the examiner to evaluate each applicant's ability to function within the

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The Admin JPMs have rarely been administered one-on-one, in my experience. In most cases, they have been administered with one inspector/examiner with a group (2-4) of operator candidates.

Additional or replacement scenarios should also be prepared and available while administering the operating tests in accordance with ES-302, in case one of the planned scenarios does not work as intended.

- b. The simulator operating tests (i.e., scenario sets) will be constructed by selecting and modifying scenarios from existing facility licensee or NRC scenario banks and by developing new scenarios.

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 initial licensing operating exams. For example, if a "CCW pump trip" was used on the previous NRC operating test for Event 2 of a scenario, then for the new test either replace event 2 with a completely different event or create a different pump failure, such as a shaft shear of the CCW pump. The final product of all required scenarios should not contain more than 50 percent of the events (excluding the major events) from the previous two NRC initial licensing exams. Events found in spare scenarios will count as previously-used if they were made publicly available in the NRC's records management system (the Agencywide Documents Access and Management System (ADAMS)). If a facility encounters difficulty meeting this requirement (for example, because of large class sizes requiring more scenarios be generated than normal), the facility should coordinate with the NRC chief examiner to meet the intent of this section to the extent possible. Additionally, any repeated major events from the last two tests should be changed so as to alter the 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. 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.

- c. The initial conditions, normal operations, malfunctions, and major transients should be varied among the scenarios and should include startup, low-power<sup>2</sup>, and full-power situations. Review the associated walk-through outline if it has already been prepared (refer to Section D.4), and take care not to duplicate operations that will be tested during the systems walk-through portion of the operating test.
- d. To maximize the quality and consistency of the operating tests, develop new scenarios in accordance with the instructions in Appendix D. Modify existing scenarios, as necessary, to make them conform to the qualitative and quantitative attributes described in that appendix and enumerated on Form ES-301-4, "Simulator Scenario Quality Checklist." 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. A scenario that does not fit into these ranges shall be evaluated to ensure that the level of difficulty is appropriate. A scenario must have at least two critical tasks. Whenever possible, the critical tasks should be distributed so that each applicant is required to respond. Care should be taken when assigning scenario sets so that

<sup>2</sup> NUREG-1449, "NRC Staff Evaluation of Shutdown and Low-Power Operation," defines "low power" to include the range from criticality to 5 percent power.

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Major mitigative actions through the emergency operating procedures do not change even with different initiating conditions. This statement is needlessly confining.

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There is no actual requirement here; it is implied through the previous statements, but opens up both the regulator and the licensee to being able to prove that this happens. Recommend removal.

to the NRC's chief examiner so they are received by the date agreed upon with the NRC's regional office at the time the examination arrangements were confirmed; the outlines are normally due approximately 90 days before the scheduled examination date. Refer to ES-201 for additional instructions regarding the review and submittal of the examination outlines.

The NRC's chief examiner shall review the operating test outlines in accordance with ES-201, and forward any comments to the originator for resolution.

- f. After the NRC's chief examiner approves the operating test outlines, prepare the final simulator test materials by revising Form(s) ES-D-1 as requested by the NRC's chief examiner and completing a detailed operator action form (ES-D-2) for each event. All required operator actions (e.g., opening, closing, and throttling valves; starting and stopping equipment; raising and lowering level, flow, and pressure; making decisions and giving directions; acknowledging or verifying key alarms and automatic actions) shall be documented, and critical tasks shall be identified. Events that do not require an operator to take one or more verifiable actions will not count toward the minimum number of events required for each operator per Form ES-301-5.
- g. Review the completed simulator operating test for quality using Form ES-301-4, "Simulator Scenario Quality Checklist," and make any changes that might be necessary. This review shall be performed in conjunction with the associated walk-through test (refer to Sections D.3 and D.4) to minimize duplication.

Submit the entire operating test package to the designated facility reviewer or the NRC's chief examiner, as appropriate, for review and approval in accordance with Section E. The NRC's chief examiner must receive the test approximately 60 days before the scheduled administration date, unless other arrangements have been made.

## **E. Quality Reviews**

### **1. Facility Management Review**

If the operating test was prepared by the facility licensee, the preliminary outline and the proposed test shall be independently reviewed by a supervisor or manager familiar with both the exam contents and these Examination Standards before they are submitted to the NRC's regional office for review and approval in accordance with ES-201. The reviewer should evaluate the outline and test using the criteria on Forms ES-201-2, ES-301-3, and ES-301-4 and include the signed forms (for each different operating test) in the examination package submitted to the NRC in accordance with ES-201.

### **2. NRC Examiner Review**

- a. The NRC's chief examiner shall ensure that each operating test is independently reviewed for content, wording, operational validity, and level of difficulty. As a minimum, the chief examiner shall check the items listed on Forms ES-301-3 and ES-301-4, as applicable and determine the acceptability of the submitted operating test by reviewing every JPM and Simulator Operating Test scenario using Form ES-301-7. The examiner should keep in mind that counting the number of scenario quantitative attributes is not always indicative of the scenario's level of difficulty. Although there are no definitive minimum or maximum attribute

1 values that can be used to identify scenarios that will not discriminate because they are too easy or difficult, scenarios that fall outside the target ranges specified on Form ES-301-4 should be carefully evaluated to ensure they are appropriate. Refer to Section C.3 of ES-201 for additional guidance regarding examination reviews.

- b. Operating tests should be reviewed as soon as possible after receipt so that supervisory approval can be obtained before the final review with the facility licensee, which is normally scheduled about 3 weeks before the administration date. It is especially important that the examiner promptly review tests prepared by a facility licensee because of the extra time that may be required if extensive changes are necessary. The chief examiner shall consolidate the comments from other regional reviewers and submit one set of comments to the author.
- c. If the facility licensee developed the operating test, the facility licensee is primarily responsible for technical accuracy and compliance with the restrictions concerning the use of examination banks. However, the chief examiner is expected to use his or her best judgment and take reasonable measures, including selective review of reference materials and past tests, to verify these attributes.
- d. The chief examiner will note/review any changes that need to be made and forward the tests to the responsible supervisor for review and comment in accordance with Section E.3 before reviewing the examinations with the author or facility contact. There are no minimum or maximum limits on the number or scope of changes the chief examiner may direct the author or facility contact to make to the proposed tests, provided that they are necessary to make the tests conform to established acceptance criteria. Refer to ES-201 for additional guidance regarding NRC response to facility-developed examinations that are significantly deficient.
- e. Upon supervisory approval, and generally at least 21 days before the operating tests are scheduled to be given, the chief examiner will review the tests with the facility licensee in accordance with ES-201.

Tests that were developed by the NRC should be clean, properly formatted, and "ready-to-give" before they are reviewed with the facility licensee. The regional office should not rely on the facility licensee to ensure that the tests are of acceptable quality to administer.

- f. After reviewing the tests with the facility licensee, the chief examiner will ensure that any comments and recommendations are resolved and the tests are revised as necessary. If the facility licensee developed the tests, it will generally be expected to make whatever changes the NRC recommends.
- g. After the necessary changes have been made and the chief examiner is satisfied with the test, he or she will sign Form(s) ES-301-3 and forward the test package to the responsible supervisor for final approval.

### **3. NRC Supervisory Review**

- a. In accordance with ES-201, the responsible supervisor shall review the operating tests before authorizing the chief examiner to proceed with the facility pre-review. The supervisory review is not intended to be another detailed review, but rather a

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Subjective at best. The scenarios, and all exam items, should not be judged for difficulty, only if they meet the minimum standards for construction. If the qualitative attributes are satisfied and there are enough verifiable actions, then the standard is met.

Facility:	Date of Exam:	Scenario Numbers: / /	Operating Test No.:		
QUALITATIVE ATTRIBUTES		Initials			
		a	b*	c#	
1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the operators into expected events.					
2. The scenarios consist mostly of related events.					
3. Each event description consists of <ul style="list-style-type: none"> <li>• the point in the scenario when it is to be initiated</li> <li>• the malfunction(s) or conditions that are entered to initiate the event</li> <li>• the symptoms/cues that will be visible to the crew</li> <li>• the expected operator actions (by shift position)</li> <li>• the event termination point (if applicable)</li> </ul>					
4. The events are valid with regard to physics and thermodynamics.					
5. Sequencing and timing of events is reasonable, and allows the examination team to obtain complete evaluation results commensurate with the scenario objectives.					
6. If time compression techniques are used, the scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.					
7. The simulator modeling is not altered.					
8. The scenarios have been validated. Pursuant to 10 CFR 55.46(d), any open simulator performance deficiencies or deviations from the referenced plant have been evaluated to ensure that functional fidelity is maintained while running the planned scenarios.					
9. Every operator will be evaluated using at least one new or significantly modified scenario. All other scenarios have been altered in accordance with Section D.5 of ES-301. <span style="background-color: yellow;">1. of more than 50% of the events/malfunctions are repeated from the previous two NRC initial licensing operating exams, major events excluded.</span> No. of Non-Major Events from the last 2 exams: ___ / Total Non-Major Events: ___ = % Repeat					
10. All individual operator competencies can be evaluated, as verified using Form ES-301-6 (submit the form along with the simulator scenarios).					
11. The scenario set provides the opportunity for each applicant to be evaluated in each of the applicable rating factors. (Competency Rating factors as described on forms ES-303-1 and ES-303-3.)					
12. Each applicant will be significantly involved in the minimum number of transients and events specified on Form ES-301-5 (submit the form with the simulator scenarios).					
<span style="background-color: yellow;">2b. Applicants are evaluated on a similar number of pre-identified CTs across scenarios.</span>					
14. The level of difficulty is appropriate to support licensing decisions for each crew position.					
Target Quantitative Attributes (Per Scenario; See Section D.5.d)		Actual Attributes		--	--
1.	Malfunctions after EOP entry (1-2)	/	/		
2.	Abnormal events (2-4)	/	/		
3.	Major transients (1-2)	/	/		
4.	EOPs entered/requiring substantive actions (1-2)	/	/		
5.	EOP contingencies requiring substantive actions (0-2)	/	/		
6.	EOP based Critical tasks (2-3)	/	/		
7.	Total number of Critical Tasks (2-6)	/	/		
NOTE: * The facility signature is not applicable for NRC-developed tests. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.					

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**1** Number: 1 Author: x10125 Subject: Highlight Date: 2/22/2016 3:32:03 PM -06'00'

This isn't quite clear. The guidance is that they can be repeated if they are modified. There is going to be a decreasing number of available "events." and with larger and larger classes, this could become difficult to meet with no benefit. As long as the scenario is different, it should be OK to have a combination of events put together to make that scenario. This adds no value and pushes into the operational validity of the exam.

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**1** Number: 2 Author: x10125 Subject: Highlight Date: 2/22/2016 3:33:37 PM -06'00'

No justification for adding this. Remove or justify/explain.

Admin JPMs	Admin Topic & K/A	LOD (1-5)								U/E/S	Explanation		
			IC Focus	Cues	Critical Steps	Scope (N/B)	Over- lap	Perf. Std	Job-Link			Minutia	Key

Instructions for Completing this Table: Check or mark any item(s) requiring comment and explain the issue in the space provided using the guide below:

1. Check each JPM for appropriate Admin Topic requirements (COO, EC, Rad, EP) and corresponding K/A. Mark in column 1.
  2.  Determine level of difficulty (LOD) using established 1-5 rating scale. Levels 1 and 5 represent inappropriate (low or high) discriminatory level for the license being tested. Mark in column 2.
  3. In column 3, Attributes, check the appropriate box when an attribute is **not met**:
    - The initial conditions and/or initiating cue is clear to ensure the operator understands the task and how to begin.
    - The JPM contains appropriate cues that clearly indicate when they are to be provided to the examinee. Cues are objective and not leading.
    - All critical steps (elements) properly identified.
    - Scope of the task is not too narrow (N) or too broad (B).
    - There is not excessive overlap with other part of operating test or written examination.
    - The task performance standard clearly describes the expected outcome i.e., end state. Each performance step identifies a standard for successful completion of the step.
  4. For column 4, Job Content Errors, check the appropriate box if the job content **does not meet** the following elements:
    - Topics are linked to job content (e.g., not a disguised task, task required in real job).
    - Task is important and has safety significance.
    - A valid marked up key was provided (graph interpretation, initialed steps for hand-outs, etc).
  5. Based on the reviewer's judgment, is the JPM as written (U)nacceptable (requiring repair or replacement), in need of (E)nhancement, or (S)atisfactory? Mark in column 5.
  6. In column 6, provide a brief description of any (U)nacceptable or (E)nhancement rating from column 5.
- Save initial review comments and detail subsequent comment resolution so that each exam-bound JPM is marked by a (S)atisfactory resolution on this form.

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 Number: 1 Author: x10125 Subject: Highlight Date: 2/23/2016 7:58:16 AM -06'00'

This new form will take some vetting. It should have been used in draft for several exams in each region before implementation, otherwise an additional revision to the NUREG will be required.

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 Number: 2 Author: x10125 Subject: Highlight Date: 2/23/2016 7:52:48 AM -06'00'

How do you discern LOD for a JPM? This is needlessly subjective. For task-based performance activities, the standard should be the only measure of judgement. If the task has a high enough KA, then the LOD is irrelevant. This is not SAT-based.

JPMs	Function & K/A	(1-5)	IC Focus	Cues	Critical Steps	Scope (N/B)	Overlap	Perf. Std	Job-Link	Minutia	Key	U/E/S

Instructions for Completing this Table: Check or mark any item(s) requiring comment and explain the issue in the space provided using the guide below:

1. Check each JPM for appropriate safety function requirements and corresponding K/A. Mark in column 1.
  2.  Determine level of difficulty (LOD) using established 1-5 rating scale. Levels 1 and 5 represent inappropriate (low or high) discriminatory level for the license being tested. Mark in column 2.
  3. In column 3, Attributes, check the appropriate box when an attribute is **not met**:
    - The initial conditions and/or initiating cue is clear to ensure the operator understands the task and how to begin.
    - The JPM contains appropriate cues that clearly indicate when they are to be provided to the examinee. Cues are objective and not leading.
    - All critical steps (elements) properly identified.
    - Scope of the task is not too narrow (N) or too broad (B).
    - There is not excessive overlap with other part of operating test or written examination.
    - The task performance standard clearly describes the expected outcome i.e., end state. Each performance step identifies a standard for successful completion of the step.
  4. For column 4, Job Content Errors, check the appropriate box if the job content **does not meet** the following elements:
    - Topics are linked to job content (e.g., not a disguised task, task required in real job).
    - Task is important and has safety significance.
    - A valid marked up key was provided (graph interpretation, initialed steps for hand-outs, etc).
  5. Based on the reviewer's judgment, is the JPM as written (U)nacceptable (requiring repair or replacement), in need of (E)nhancement, or (S)atisfactory? Mark in column 5.
  6. In column 6, provide a brief description of any (U)nacceptable or (E)nhancement rating from column 5.
- Save initial review comments and detail subsequent comment resolution so that each exam-bound JPM is marked by a (S)atisfactory resolution on this form.

See above comment.

#	Event Totals	Events Unsat	TS Totals	TS Unsat	CT Total	CT Unsat	(2+4+6) / (1+3+5)	U/E/S	9 Explanation

Instructions for Completing this Table:

Check or mark any item(s) requiring comment and explain the issue in the space provided.

1. For each simulator scenario, enter the **total** number of events (column 1.), Technical Specification (TS) entries/actions (column 3.), and Critical Tasks (CT) (column 5.).
2. For each simulator scenario, evaluate each event, TS and CT as Satisfactory (S), Enhance (E), or Unsatisfactory (U) based on the criteria below:
  - a. Events: each event is described on a Form ES-D-2 including all switch manipulations, pertinent alarms and verifiable actions. Event actions are balanced between ATC and BOP applicants during the scenario. All event related attributes on Form ES-301-4 are met. Enter the total number of unsatisfactory events in column 2.
  - b. TS: a scenario includes at least two TS entries/actions across at least two difference events. TS entries and actions are detailed on Form ES-D-2. Enter the total number of unsatisfactory TS entries/actions in column 4.
  - c. CT: Check that a scenario includes at least two EOP-based CTs (if only 1 EOP-CT then 1 CT is unsat, if no EOP-CTs then 2 CTs are unsat). Check that each CT (EOP or non-EOP based) is explicitly bounded on Form ES-D-2 with measurable performance standards (see Appendix D). Enter the total number of unsatisfactory CTs in column 6.
3. In column 9, explain each unsatisfactory event, TS, and CT from column 8. Editorial comments can also be added here.
4. In column 7, calculate the percentage of unsatisfactory scenario elements:  $[(\text{columns } 2 + 4 + 6) / (\text{columns } 1 + 3 + 5)] \times 100\%$ .
5. If the value in column 7 is  $> 20\%$  then mark the scenario as (U)nsatisfactory in column 8. If column 7  $\leq 20\%$  annotate with (E)nhancement or (S)atisfactory.

Save initial review comments and detail subsequent comment resolution so that each exam-bound scenario is marked by a (S)atisfactory resolution on this form.

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 Number: 1    Author: x10125    Subject: Highlight    Date: 2/23/2016 8:18:09 AM -06'00'  
ES 301, d.5.d changed the wording for this from "Event" to "Evolution, failure, or transient," yet this change was not incorporated throughout the rest of the NUREG. This highlighted location is one of many where the wording is inconsistent.

- The facility licensee will make the video and audio recordings available to the NRC for resolving/confirming examiner documentation of specific applicant errors.
  - Applicants who receive examination failure notice based on their simulator operating test performance (in a preliminary results or a final denial letter) will be provided an opportunity to review those portions of the video and audio recordings under facility licensee supervision that directly affect their simulator operating test failure decision. The facility licensee will notify the NRC chief examiner prior to reviewing the video and audio recordings.
- k. The number of persons present during an operating test should be limited to ensure the integrity of the test and to minimize distractions to the applicants:
- Except for the simulation facility operators, no other member of the facility's staff shall be allowed to observe an operating test without the chief examiner's permission. Facility management and other personnel deemed necessary by the facility licensee should generally be allowed access to the examination (under security agreements, as appropriate), provided that the simulation facility can accommodate them and there is no impact on the applicants.
  - Although the simulation facility operator will normally assume the role of the other personnel that the applicants direct or notify regarding plant operations, the chief examiner may permit other members of the facility training or operations staff (e.g., a shift technical advisor (STA)) to augment the operating shift team if necessary. In such instances, the chief examiner shall fully brief those individuals regarding their responsibilities, reporting requirements, duties, and level of participation before the operating test begins. All participants in the testing process must also be mindful of their responsibilities with regard to examination integrity pursuant to 10 CFR 55.49, "Integrity of Examinations and Tests."
  - Although the applicants will generally be expected to perform "peer checks" in accordance with the facility licensee's operations and training procedures and practices, additional personnel may not be stationed or called upon for this purpose.
  - If the facility licensee normally operates with and is required by its technical specifications to have more than two ROs in the control room, the chief examiner may authorize the use of additional surrogates to fill out the crews. In such cases, examiners must take care that the presence of additional operators does not dilute the examiners' ability to evaluate each applicant during the required number of events and on every applicable competency and rating factor. Examiners shall not hesitate to run additional scenarios, as necessary, to ensure that every applicant has the opportunity to demonstrate his or her competence.

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**I** Number: 1 Author: x10125 Subject: Highlight Date: 2/23/2016 9:20:45 AM -06'00'  
Has this ever been done (allow an STA in an initial license exam)? Our candidates ask about this, and it appears as though the NUREG allows it even though it is never practiced. Recommend removal or start allowing it from a realism standpoint.

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**I** Number: 2 Author: x10125 Subject: Highlight Date: 2/23/2016 10:04:38 AM -06'00'  
This is inconsistently implemented by examiners. This revision is an opportunity to define exactly how this is done so that it is consistent. The statement is incorrect that the applicants are expected to do Peer Checks in accordance with station procedures.

to be recorded. Parameter readings shall be collected at meaningful intervals, depending on the parameter, the nature of the event, and the capability of the simulation facility. The chief examiner shall retain the recordings as backup documentation to augment the notes taken by the examiners during the simulator test.

- g. The examiner in charge of each scenario should arrange a suitable communication system with the simulator operator so that he or she can be prompted to insert the malfunctions without cuing the applicants. Malfunctions may be planned for a predetermined time or power level so that the examiners and the facility operator are aware of the event that is occurring or pending.

If necessary, the examiners may use time compression to speed up the response of key parameters so that the scenario can proceed to the next event within a reasonable time. Time compression is acceptable as long as it is used judiciously and the operators are given sufficient time to perform the tasks that they would typically perform in real time. If the examiners intend to use time compression, they should inform the applicants of that fact during the operating test briefing (refer to Section D.1.a). The examiners should also mitigate the potential for negative training by debriefing the applicants after any scenario in which time compression was used.

- h. <sup>1</sup> Before beginning each scenario set, the examiners shall have the simulator operator advance any control room strip chart recorders that may prove useful in recreating the sequence of events. The charts shall be clearly marked with the date, time, and examiner's initials so that they can be accurately matched with the correct operating crew. For digital control rooms that do not have strip chart recorders, an alternate method of recording any applicable parameters shall be used. (This also includes operating plant control rooms that have replaced paper recorders with electronic recorders.)

- i. The chief examiner should ensure that the simulator operator (or examiner) playing the role of other plant personnel is aware of the time scale for responding to the applicants' requests for information. For example, fast-time could be specified for auxiliary operator checks or lineups to prevent long delays in simulated operations, while maintenance and chemistry sample information can be provided with normal time delays to present the applicants with the same analysis problems that they will face as operators.

- j. Before the simulator test begins, the examiners shall caution the simulator operator to provide only information that is specifically requested by the applicants and does not compromise the integrity of the examination. When the simulator operator is briefing the applicants or communicating with them on the telephone, the examiners should monitor the conversations to ensure that the information provided is appropriate and does not cue the applicants.

- k. Before the simulator test begins, the facility instructor (or examiner) will provide a shift turnover briefing. The briefing will cover present plant conditions, power history, equipment out of service, abnormal conditions, surveillances due, and instructions for the shift, and the applicants will be given time to familiarize themselves with the plant status.

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 Number: 1 Author: x10125 Subject: Highlight Date: 2/23/2016 11:45:10 AM -06'00'

The change summary says that this "shall" is added for exam security purposes, but this statement doesn't have anything to do with exam security. If the data is collected and retained digitally per D.3.f above, the charts shouldn't need to be retained. Initialing/dating/timing the charts doesn't add any value from an exam security standpoint (see change summary). Recommend restating to "ensure charts that are not retained for data collection purposes do not provide any cues to the candidates regarding exam content."

- l. The operating team or crew (including license applicants and surrogates, if applicable) should perform peer checks in accordance with the facility licensee's operations and training procedures and practices. NRC examiners will not perform this function. If an applicant begins to make an error that is corrected by a peer checker, the applicant will be held accountable for the consequences of the potential error without regard to mitigation by the crew.
- m. Each examiner should use the expected actions and behaviors listed on Form ES-D-2 as a guide while administering the simulator tests. If an applicant performs as expected, the examiner may simply note in the left-hand column of the form the time when the expected actions occurred. However, if an applicant does not perform as expected, the examiner should note the applicant's actions (or lack thereof) next to or below the expected action and follow up with appropriate questions after the simulator scenario is completed (refer to Section D.3.n).

Each examiner must determine the best way to document the applicant's actions. Some examiners record a minute-by-minute account of all key plant events and applicant actions as they occur; other examiners record only the applicant's significant actions. Each individual examiner should develop his or her examination documentation technique. The documentation technique developed must provide an adequate basis for a licensing decision. In addition, the examiner's notes must provide sufficient information to allow the examiner to confidently assess the applicant's performance on the competencies described in Appendix D.

- n. Examiners shall limit discussions with the applicants during the scenarios both to maintain realism and to avoid distracting the applicants from operating the plant. The examiners' questions during the scenarios should be limited to those that are necessary to assess the applicants' understanding of plant conditions and the required operator actions. Whenever possible, the examiner shall defer questioning the applicant until a time when the applicant is not operating or closely monitoring the plant (preferably after the simulator has been placed in "freeze").

The examiner's followup questions or concerns can generally be addressed during a brief question-and-answer period after each scenario or during the control room systems and facility walk-through portion of the operating test if it is performed after the simulator test. Because the simulator operating tests for the initial licensing examination are conducted with only one applicant in the SRO position, the NRC does not require the SRO applicant to complete the emergency classification within the normal event classification period of time. In most cases, the applicant is asked to classify the event after the scenario is complete and the simulator is in freeze. As explained in Appendix D performance of an event classification does not meet the CT criteria.

- o. The examiners who administer the simulator test shall confer immediately after completing the scenario set to compare notes and verify that each examiner observed his or her applicant performing the required number of transients and events in a manner sufficient to justify a proper evaluation of all required

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Number: 1 Author: x10125 Subject: Highlight Date: 2/23/2016 11:31:59 AM -06'00'

Does this remove the classification from use as an Administrative JPM? In a 3-person crew, these should be left to the Admin JPM, not included as an evaluation in the scenario. Recommend to remove this.

Separately, 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.

- c. On the rough notes and documentation, label or highlight every action, response, note, or comment that may constitute a performance deficiency.
- d. Review each simulator operating test performance deficiency. Using as a guide the competency and rating factor descriptions in Appendix D, "Simulator Testing Guidelines," and on Form ES-303-3, "RO Competency Grading Worksheet for the Simulator Operating Test," or Form ES-303-4, "SRO Competency Grading Worksheet for the Simulator Operating Test," code each deficiency with the number and letter of the rating factor(s) it most accurately reflects (e.g., 4.a).

<sup>1</sup>Keep in mind that for the SRO Technical Specifications (TS) competency, every missed TS entry represents a performance deficiency. For example, if a single event during a scenario has three associated TS entries, each missed TS from that single event constitutes a separate performance deficiency, and must be treated this way when grading the exam in accordance with D.2.b of this section. Similarly, if an applicant incorrectly determines that an inoperability exists for an operable component, or identifies and enters a TS that does not apply, these represent performance deficiencies that must be graded accordingly. However, performance deficiencies related to recognition (RF 6.a) should not be "carried forward" as performance deficiencies under location (RF 6.b) or TS compliance (RF 6.c), unless the applicant's deficient knowledge regarding these rating factors is substantiated by post-scenario questioning. Similarly, an applicant who recognizes that an inoperability exists, but who does not locate the correct TS (RF 6.b) cannot have that performance deficiency "carried forward" as a performance deficiency under TS compliance (RF 6.c), unless the applicant's deficient knowledge regarding TS compliance is substantiated by post-scenario questioning.

Whenever possible, attempt to identify the cause of each performance deficiency and code each deficiency with the applicable rating factor. One performance deficiency that has multiple causes may be coded with multiple rating factors if the performance deficiency can be shown, consistent with the criteria in Section D.3.b, to be relevant to each of the cited rating factors. <sup>2</sup>There is no limit on the number of rating factors that may be assigned to a single performance deficiency, provided there is adequate justification for each rating factor.

As stated in ES-302, it is essential that the simulator operating test documentation is consistent and mutually supportive for all applicants in an operating crew. Performance deficiencies that involved more than one applicant should be noted by each applicant's evaluating examiner. If the examination team members do not have the opportunity to discuss and compare their observations before leaving the site, the chief examiner shall schedule a meeting after the examiners return to their respective offices.

## 2. Evaluate the Applicant's Performance

After categorizing and coding the rough notes, review, evaluate, and grade the applicant's performance, as follows:

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**T** Number: 1 Author: x10125 Subject: Highlight Date: 2/23/2016 12:05:25 PM -06'00'

This statement is not aligned with sound evaluation techniques. Each action should be taken in aggregate against the exam as a whole, not weighted unnecessarily toward technical specification calls.

**T** Number: 2 Author: x10125 Subject: Highlight Date: 2/23/2016 12:36:20 PM -06'00'

This is in direct contradiction of the above statements regarding "carrying forward" errors or performance deficiencies. Objective evaluation, whether written or operating exam, should evaluate each item only once in the appropriate category.

This adds too much latitude for examiners to evaluate subjectively instead of whether the candidate can adequately carry out the duties of his/her license safely.

The LLRT recommended that these are limited to no more than 2 rating factors, which is endorsed by NEL.

systems walk-through pursuant to ES-204, "Processing Excusals and Waivers Requested by Reactor Operator and Senior Reactor Operator Applicants," must achieve a satisfactory grade on at least 80 percent of the topics/JPMs (i.e., 4/5 for RO and SRO applicants) to pass.

Document the applicant's grades by placing an "S" or a "U" in the appropriate blocks in the "Operating Test Summary" on page 1 of Form ES-303-1. Enter "W" or "E" if any part of the walk-through was waived or excused in accordance with ES-204. Document and justify every performance deficiency in accordance with Section D.3, below.

b. **The "Simulator Operating Test"**

Using Form ES-303-3 or ES-303-4, depending on the applicant's license level, and the following generic guidance, evaluate performance deficiencies during the simulator test to determine a grade for every applicable rating factor (RF) and competency. Keep in mind that the simulator test is generally graded based on competencies rather than consequences; every performance deficiency that reflects on an operator's competence is considered equal unless it is related to the performance of a critical task (as determined in accordance with ES-301 and Appendix D).

- If there is no basis upon which to grade a rating factor (i.e., it is "not observed"), circle the "0" "Weighting Factor," enter a "RF Grade" of "N/O," and explain in accordance with Section D.3, below. Depending upon which RF is "N/O," circle the appropriate "Weighting Factor" for each remaining RF applicable to that competency; the "Weighting Factors" for each competency must always add up to "1." If more than one rating factor per competency or more than two rating factors overall are not observed, inform the NRC's regional office management and consult with the NRR/NRO operator licensing program office to determine whether the test supports a licensing decision.
- If an applicant performs an activity related to a rating factor and has no performance deficiencies, circle an "RF Score" of "3" for that rating factor.

For the purposes of the next two bullet points, the terms *critical error*, *critical task error*, and *missed CT* can be used interchangeably and refer to a performance deficiency associated with the failure of a critical task (CT). *Noncritical errors* are all other performance deficiencies not associated with the failure of a critical task.

- For noncritical errors:
  - If an applicant has a single performance deficiency related to a rating factor, other than rating factors under the Communications competency, circle an "RF Score" of "2" for that rating factor. If the rating factor is under the Communications competency, no deduction is taken for the first performance deficiency.
  - If an applicant has two performance deficiencies relating to a rating factor, other than rating factors under the Communications competency, circle an "RF Score" of "1" for that rating factor. If an applicant has a second or a third performance deficiency in a rating

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 Number: 1 Author: x10125 Subject: Highlight Date: 2/23/2016 12:24:46 PM -06'00'

Disagree with the proposed change to the rating scale from 1-3 to 0-3. This has the consequence of reducing reliability in grading and leads to high failure rates without change in candidate performance. The rating factors for this exam should be based on compliance with the standard, and this change creates an upward bias in performance without a change in rule.

Additionally, the definition of critical tasks contradicts many years of written guidance by the owners groups.

Endorse the NEI argument and recommendation regarding rejecting this change.

factor under the Communications competency, a 1-point deduction is taken, resulting in an "RF Score" of "2."

- If an applicant has three or more performance deficiencies related to a rating factor, other than rating factors under the Communications competency, circle an "RF Score" of "0." If an applicant has four or more performance deficiencies in a rating factor under the Communications competency, a 2-point deduction is taken, resulting in an "RF Score" of "1." The minimum score for rating factors under Communications is "1."
- For critical errors:
  - For all rating factors other than those under the Communications competency, a missed CT results in a 3-point deduction for an "RF Score" of "0."
  - For rating factors under the Communications competency, a missed CT results in a 2-point deduction for an "RF score" of "1." The minimum score for rating factors under Communications is "1."
  - Failing to perform one CT will not necessarily result in an automatic overall exam failure. However, success on every CT does not prevent overall exam failure if other noted deficiencies, when aggregated, justify a failure.

Multiply each "RF Score" by its associated "Weighting Factor" to obtain a numerical measure ("RF Grade") for the applicant's performance on each rating factor. Then sum the RF Grades to obtain a "Competency Grade" for each competency and enter the corresponding numbers (or "N/O," as appropriate) on page 3 of the RO or SRO applicant's Form ES-303-1.

For each competency on page 3 of Form ES-303-1, sum the rating factor grades and enter the resulting competency grade in the designated column. (The grades should range between 0 and 3.)

Using the following evaluation criteria, determine whether the applicant's overall performance on the simulator test is satisfactory or unsatisfactory, and document the grade by placing an "S" or a "U" in the "Simulator Operating Test" block of the "Operating Test Summary" on page 1 of Form ES-303-1. Enter "W" or "E" if this part of the operating test was waived or excused in accordance with ES-204.

- If the grade for all competencies is greater than 1.8, the applicant's performance is generally satisfactory.
- If the grade for Competency 4, "Communications and Crew Interactions," is less than or equal to 1.8 but greater than 1.0, and the individual grades for all other competencies are 2.0 or greater, the applicant's performance is satisfactory.
- If the grade for Competency 4 is 1.0, or the grade for any other competency is 1.8 or less, the applicant's performance is unsatisfactory.

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 Number: 1 Author: x10125 Subject: Highlight Date: 2/23/2016 12:20:43 PM -06'00'

All grading should be consistent. As stated above, minimum should be 1. Creating two different minimum grades presents an error-likely situation for examiners.

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 Number: 2 Author: x10125 Subject: Highlight Date: 2/23/2016 12:24:30 PM -06'00'

The grading should be ultimately based on the competence of the operator to ensure the health and safety of the public. Taking conservative action and not meeting a series of non-critical tasks should not result in an exam failure.

Endorse the NEI argument and recommendation regarding rejecting this change.

Examination Outline Cross-Reference:	Level	RO	SRO
	Tier #	_____	_____
	Group #	_____	_____
	K/A #	_____	_____
	Importance Rating	_____	_____

K/A Statement:  
Proposed Question:

Proposed Answer: \_\_\_\_\_

Explanation (Optional):

Technical Reference(s): \_\_\_\_\_  
(Attach if not previously provided, \_\_\_\_\_  
including version/revision number) \_\_\_\_\_

Proposed references to be provided to applicants during examination: \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New \_\_\_\_\_

**Question History:** Last NRC Exam \_\_\_\_\_

*(Optional: Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)*

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 \_\_\_\_\_

55.43 \_\_\_\_\_

Comments:

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 Number: 1      Author: x10125      Subject: Highlight      Date: 3/15/2016 3:33:42 PM

This was removed in ES 201 C.1.h (although I disagree with that change). It adds no value to change this process, but if you are going to change it, it needs to be removed from this form as well.

- b. Personnel responding to questions raised by applicants during the examination must be extremely careful not to lead the applicants or give away answers when clarifying questions. If the proctor has any doubt about how to respond to an applicant's question, it is best to withhold additional guidance and instruct the applicant to do his or her best with the information that is provided.

Any question changes or clarifications shall be made on a chalk board or white board, if available, and called to the attention of all the applicants. Changes made to questions during the examination should be made in ink on the NRC's master copy and a copy that is retained by the facility staff after the examination is administered. Changes shall be reviewed and approved by the NRC's chief examiner as part of the grading process (refer to ES-403).

All applicant questions regarding specific written examination test items during exam administration and post-exam reviews with the licensee training staff and all statements of clarification shall also be documented (verbatim if possible) for future review by the NRC's chief examiner and for reference in resolving grading conflicts.

- c. The proctor shall periodically advise the applicants of the time that remains to complete the examination. Normally, a chalk board or white board is available and can be used for this purpose.

#### **4. Complete the Examination**

- a. As the applicants complete the examination, ensure that they sign the examination cover sheet and staple it on top of their answer sheets. Collect the examination packages, including the questions and answer sheets, and any reference material provided with the examination. Verify that all applicants have entered their names on both the answer and cover sheets, and record the official start time and the time at which each applicant completed the examination in the space provided on the examination cover sheet.
- b. Retain the cover and answer sheets for grading in accordance with ES-403. The question books may be distributed to the applicants after the last examination has been collected.
- c. Remind the applicants to leave the examination area, as previously defined.
- d. When the allotted time for the examination (1 hour for the 25-question SRO-upgrade exam, 4 hours for the SRO exam limited to fuel handling, 6 hours for the RO exam, and 8 hours for the combined RO/SRO exam) has elapsed, instruct the remaining applicants to stop work, sign their examination cover sheets, and turn in their examinations. The times allotted for taking each examination as noted above shall not be extended except for unavoidable situations (e.g., loss of power, building evacuation, emergency response, etc.) and the licensee shall first notify the NRC's regional office to ensure that a point of contact remains available to respond to questions. It is the responsibility of the applicant to ensure his/her physical capability to complete the examination in the allotted time. The facility



- b. After the licensing official has signed the license, denial, and notification letters, the regional office shall send each applicant's letter along with the following materials:

NOTE: the following materials may be sent either electronically via cd/electronic storage device or hard copy.

- a copy of Forms ES-303-1 and ES-303-2
  - a copy of Form ES-D-1 (and Form ES-D-2 if the applicant failed the simulator operating test) reflecting the "as run" scenario conditions but it out any rough examiner notes regarding the applicant's performance (pen-and-ink markups of the original, approved scenarios are acceptable)
  - <sup>1</sup> copy of all JPMs that the applicant failed (if the applicant failed the operating test in the walk-thru or admin topics categories)
  - <sup>2</sup> copy of the applicant's written examination cover and answer sheets (as well as a copy of the master written examination and answer key if the applicant failed the written examination) reflecting the "as administered" JPM conditions but it out any rough examiner notes regarding the applicant's performance (pen-and-ink markups of the original approved JPMS are acceptable).
- c. The regional office shall ensure a copy of Form ES-501-2 is placed in ADAMS in accordance with Section F.1. If any of the examinations are later regraded in response to an applicant's request for an informal NRC staff review (refer to ES-502, "Processing Requests for Administrative Reviews and Hearings After Initial License Denial"), the original Form ES-501-2 on file in the regional office shall be corrected by lining out the old grade, entering the new grade, and initialing the change. Additionally, whenever a change is made, the regional office shall ensure a copy of the revised form is placed in ADAMS in the appropriate master examination file.
- d. The responsible supervisor should consider phoning the facility licensee management counterpart to discuss the examination outcome and lessons learned. Any pertinent feedback on the examination process should be forwarded to the operator licensing program office for consideration.

## **2. Return the Facility Reference Material**

If the facility licensee desires, the NRC's chief examiner shall ensure that the reference materials provided for NRC examiners to use in preparing for the examinations are returned to the facility licensee as soon as possible. If none of the applicants failed the examination, the materials should be returned as soon as the NRC issues the licenses. If an applicant was denied a license based on an examination failure, the reference materials should be retained during the period in which the applicant may request an informal NRC staff review or an adjudicatory hearing. <sup>3</sup> If an applicant requests an informal NRC staff review or an adjudicatory hearing in accordance with ES-502, the chief examiner shall consult with their regional counsel before returning or destroying any document related to the examination.

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**I** Number: 1 Author: x10125 Subject: Highlight Date: 3/16/2016 7:28:41 AM

Please revise to ensure that the actual marked-up JPMs that the applicant failed are sent to the applicant. This has been inconsistently performed in the past, and sending clean, unmarked versions of the JPMs does not help the applicants or the station remediate or analyze the failures.

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**I** Number: 2 Author: x10125 Subject: Highlight Date: 3/16/2016 7:32:43 AM

This sentence does not make sense; the first part is about the written exam and answer key, and the second part is about the JPMs. See comment above regarding failed JPMs - the candidate/site should receive a copy of the as-administered JPM for analysis/remediation/response. Sending the actual, marked up version of the JPM is also appropriately aligned with full disclosure of licensing or inspection procedures.

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**I** Number: 3 Author: x10125 Subject: Highlight Date: 3/16/2016 7:47:31 AM

No original material should be destroyed by the Region or the examiners until all final appeals or hearings are complete, or until the allowed time to request those appeals or hearings has passed. This could be considered a destruction of evidence if the matter is taken to a hearing or higher. This should be revised - it is not the decision of the chief examiner or regional counsel at this point in the process. This statement is also inconsistent and conflicting with the guidance in ES 501, E.4.b below.

threaten public health and safety. Scenarios that require little analysis or problem-solving and few operator actions may not provide an adequate basis to evaluate the required rating factors.

Section E describes the individual competencies that apply to the RO and SRO license levels during initial and requalification examinations. ES-303, "Documenting and Grading Initial Operating Tests," identifies the rating factors within each competency for the initial licensing examination (specifically, on Forms ES-303-3 and ES-303-4 for RO and SRO applicants, respectively), while ES-604 identifies the crew competencies that apply only to requalification examinations.

e. *Level of Difficulty*

The dynamic simulator operating test must discriminate between those examinees that have and have not adequately mastered the knowledge, skills, and abilities required to be licensed operators. Simulator scenarios that are either too easy or too difficult are not effective discriminators.

In general, the level of difficulty of a scenario will increase with an increase in its quantitative attributes, such as the number of malfunctions or CTs (discussed below). However, the number of quantitative attributes in a scenario is not always indicative of the scenario's level of difficulty; that is, two scenarios having the same quantitative attributes can vary significantly in level of difficulty. There are no definitive minimum or maximum attribute values that can be used to identify inappropriate scenarios that will not discriminate because they are too easy or difficult.

The two most important determinants of the level of difficulty of a simulator scenario are the amount of analysis and problem solving and the number of operator actions required to mitigate the events in the scenario. Malfunctions that require analysis or problem solving increase the level of difficulty because they require the examinees to integrate a number of system conditions, evaluate their interrelationships, and take actions that demonstrate an understanding of the underlying concepts. Scenarios that consist of a number of unrelated malfunctions that require little or no operator analysis or response are generally less challenging.

f. *Scenario Overlap*

The final product of all required scenarios should not contain more than 50 percent of the events (excluding the major events) from the previous two NRC initial licensing exams. Events found in spare scenarios will count as previously-used if they were made publicly available in the NRC's records management system (Agencywide Documents Access and Management System). Should a facility encounter difficulty meeting this requirement (for example, because of large class sizes requiring more scenarios be generated than normal), the facility should coordinate with the NRC chief examiner to meet the intent of this section to the extent possible. Additionally, any repeated major events from the last two NRC exams should be changed so as to alter the 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. Furthermore, any other scenarios that

**T** Number: 1 Author: x10125 Subject: Highlight Date: 3/16/2016 8:12:16 AM

This requirement may not be achievable for large classes or subsequent large classes. There are a limited number of events which meet the requirements of this section for verifiable actions, and to exclude 50% of all previously developed events in the last 2 NRC exam cycles means that more events with low safety significance, importance, or operational validity are going to be submitted on exams. Recommend revision to state that low overlap is desirable to prevent candidates from being able to predict exam content.

**T** Number: 2 Author: x10125 Subject: Highlight Date: 3/16/2016 8:13:24 AM

This is not achievable. The mitigative strategy of major events does not change.

Taking manual control of an automatic safety system qualifies as a CT only if the auto-initiation feature fails to work. It is then safety significant for the crew to take manual actions, as plant conditions clearly indicate that an automatic action should have occurred and did not. Moreover, during scenario development and validation, identification of CTs is based on those actions which, if performed incorrectly or omitted, degrade the mitigation strategy needed in the scenario. If the manual system has also failed and no action will be effective, this should not be identified as a CT. However, if an operator or the crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a CT identified in the post-scenario review. Before administering the exam, developers and examiners should make an effort to identify events where applicant inaction or common applicant error have the potential to result in an automatic RPS or ESF actuation. One method to accomplish this is to make a blanket statement in the scenario guide that states: "Causing an unnecessary plant trip or ESF actuation may constitute a critical task failure. Actions taken by applicant(s) will be validated using NUREG-1021 Appendix D Methodology for Critical Tasks."

Emergency event classification is not required by NUREG-1021 to be part of the simulator scenario; Emergency Plan understanding is explicitly tested during the Administrative Topics Job Performance Measures. However, if a facility does include an event classification in a simulator scenario, performance of an event classification does not meet the CT criteria. Although an incorrect classification could adversely affect public health and safety if the appropriate instructions are not given to public service agencies in a timely manner, all four aspects of a CT are not met. Emergency event classifications have safety significance, an initiating cue, and a measurable performance standard but do not provide the applicant performance feedback for correct or incorrect classification. If a misclassification occurs, the emphasis for corrective action is placed on the facility licensee and an appropriate period allotted for corrective action implementation.

Therefore, although emergency classification is still an area that is to be evaluated, it should not receive the weight of a CT. If a misclassification occurs, the examiners should determine the rationale used to establish the classification to determine whether the crew understood the status of the plant and incorporate into the program evaluation those pertinent corrective actions deemed appropriate. If a widespread problem is observed during a program evaluation, the examiner should share this information with other inspection program managers.

## **E. Competency Descriptions**

### **1. Reactor Operator**

#### **a. *Interpret/Diagnose Events and Conditions Based on Alarms, Signals, and Readings***

This competency involves the ability to accurately and promptly *recognize and analyze* off-normal *trends* and *diagnose* plant conditions to guard against and mitigate conditions that are out of specification. It includes the abilities to prioritize one's attention in keeping with the severity and importance of annunciators and alarm signals and to correctly *interpret and verify* that signals are *consistent with plant and system conditions*. It does *not* include knowledge of system operation, such as set points, interlocks, or automatic actions, or the understanding of how one's actions affect the plant and system conditions.

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Number: 1 Author: x10125 Subject: Highlight Date: 3/16/2016 8:27:33 AM

See previous comment about follow-up questions regarding EPlan classification. These should be left to Admin JPMs, and not included in dynamic scenarios, even as follow-up questions. The SRO should not be evaluated/graded on this during the simulator exam.

plots an individual student's performance during training exercises. Recording sessions are typically activated or deactivated at the instructor's station. **Video and**

- **Audio Recording:** Many simulators are equipped with video and audio recording capability in the control room. Video and audio controls are typically located at the instructor's station. Refer to ES-302 Section D.1.i regarding the requirements associated with video and audio recording initial license examinations.
- *Sequence of Event Files:* Many simulators have the capability to monitor and record sequence of events during simulator scenarios. These files may stay in place and remain accessible until deleted or overwritten by subsequent scenario runs provided examination security is maintained.

## 2. Programmers' Tools

- *Software Terminals:* Simulator engineers have access to real-time monitoring and control of simulator and model conditions through software support terminals. These terminals may be located in the computer facility or the engineer's desk.
- *Independent Executives:* The conditions for scenarios can sometimes be replicated off-line using independent executive programs. These programs should not be in communication with the input/output. Independent executives and their associated initialization files may provide an indication of planned exercises if they have been used to resolve problems during scenario validation.
- *Graphical User Interfaces (GUIs):* Instructor's station graphical user interfaces often display simulated plant conditions and performance in real-time. At remote locations, such as a programmer's desk, the GUI could display the full scenario.

## 3. External Interconnections

- *ESF Feeds:* Many simulators have data links to the ESF and the operations management offices for emergency planning drills. These links can display simulated plant condition to observers outside the simulated control room during scenario validation or examinations.
- *Remote Plant Process Computer and Instructor Station Screens:* Repeater screens in the training area can display scenarios in real time to observers outside the simulated control room.
- *Modems and Remote Simulator Support Systems:* Many simulators are equipped with modems from the instructor's station or simulation computers for outside monitoring and control of simulator status and activities by parties off site.

## G. Attachments/Forms

Attachment 1	Example Initial Dynamic Simulator Scenarios
Attachment 2	Example Requalification Dynamic Simulator Scenarios
Form ES-D-1	Scenario Outline
Form ES-D-2	Required Operator Actions

