

September 24, 2007

MEMORANDUM TO: Frederick D. Brown, Director
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

FROM: Nancy L. Salgado, Chief **/RA/**
Operator Licensing and Human Performance Branch
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation

SUBJECT: FINAL VERSIONS OF SUPPLEMENT 1 TO REVISION 9 OF
NUREG-1021, "OPERATOR LICENSING EXAMINATION
STANDARDS FOR POWER REACTORS," AND SUPPLEMENT 1 TO
REVISION 2 OF NUREG-1122 [AND -1123], "KNOWLEDGE AND
ABILITIES CATALOG[S] FOR NUCLEAR POWER PLANT
OPERATORS: PRESSURIZED [BOILING] WATER REACTORS"

The purpose of this memorandum is to forward the final versions of Supplement 1 to Revision 9 of NUREG-1021, and Supplement 1 to Revision 2 of NUREG-1122 [and -1123]. These supplements have been prepared in accordance with Section C.3 of Operator Licensing Manual Chapter 110, "Control of Operator Licensing Guidance Documents."

The changes in the supplements were developed in cooperation with the industry during a series of public meetings with the Nuclear Energy Institute's Operator Licensing Focus Group (NEI OLF), and the joint Owner's Group Training Group for Pressurized and Boiling Water Reactors. Supplement 1 to Revision 9 of NUREG-1021 includes a number of minor changes that are intended to: (1) clarify licensed operator medical requirements, including the use of prescription medications; (2) clarify the use of surrogate operators during dynamic simulator scenarios; (3) clarify the selection process for generic knowledge and ability (K/A) statements; (4) qualify the NRC review of post-examination comments; (5) provide additional guidance for maintaining an active license (watchstander proficiency); and (6) conform with the changes made in Supplement 1 to Revision 2 of NUREG-1122 [and -1123], which rewords and reorganizes Section 2, "Generic Knowledge and Abilities," and adds a new K/A topic for generator voltage and electric grid disturbances. Preliminary drafts of the supplements were provided to the NRC regional offices for comment on January 31, 2007, and the staff's resolutions of the regional comments were documented by memorandum dated June 4, 2007 (ADAMS ML#071440346). The draft supplements were issued for public comment with a notice of availability published in the *Federal Register* (72 FR 28728) on May 22, 2007.

Since the public comment period closed on July 23, 2007, the staff has reviewed and resolved the comments received. The specific comments received during the public comment period are summarized in the first enclosure. The comments are categorized according to the applicable sections in NUREGs-1021, 1122 [and 1123] and every comment includes a brief resolution.

Some of the comments and resolutions were discussed in a recent public meeting held August 24, 2007, with the NEI OLF. The second, third, and fourth enclosures are copies of the supplements to the three NUREGs (note that the supplements for NUREGs-1122 and 1123 are nearly identical), with instructions provided for replacing pages in the current versions of the NUREGs. The details of the changes are briefly described in the page replacement instructions for each NUREG, and the changes in the text are indicated by vertical bars in the margins.

I have reviewed Supplement 1 to Revision 9 of NUREG-1021, and Supplement 1 to Revision 2 of NUREG-1122 [-1123], and recommend that you approve them for publication. Due to the minor nature of the changes in the supplements, and the fact that NUREGs are only guidance documents, I have concluded that the supplements do not constitute a generic backfit; therefore, reviews by the Committee to Review Generic Requirements (CRGR) or the Office of the General Counsel (OGC) are not required. If you concur with this conclusion and the proposed changes in the supplements, please sign the three attached NRC Form 426s, "Authorization to Publish a NUREG-Series Document Prepared by the NRC Staff," and return them to me. Immediately after the three NUREG supplements are published, they may be used on a voluntary basis, and at 180 days after publication, the three NUREG supplements will be fully in effect. Also after publication, the three NUREG supplements will be available at the NRC public website in two formats: (1) in an as-published, page replacement format; and (2) in a full-text format, with the replaced pages installed.

Enclosures:

1. Draft Supplements to NUREGs-1021, 1122 [and -1123] Comment Summary
2. Supplement 1 to Revision 9 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors"
3. Supplement 1 to Revision 2 of NUREG-1122, "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors"
4. Supplement 1 to Revision 2 of NUREG-1123, "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors"
5. NRC Form 426 Authorization to Publish Supplement 1 to Revision 9 of NUREG-1021
6. NRC Form 426 Authorization to Publish Supplement 1 to Revision 2 of NUREG-1122
7. NRC Form 426 Authorization to Publish Supplement 1 to Revision 2 of NUREG-1123

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F.D. Brown

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7. NRC Form 426 Authorization to Publish Supplement 1 to Revision 2 of NUREG-1123

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Draft Supplements to NUREGs-1021, 1122 [and -1123] Comment Summary

The following public comments were submitted in response to 72 FR 28728 dated May 27, 2007. Comments and recommendations made therein, as well as those provided by the NRC staff, are included in this summary

Response No.	Source	Date	Accession Number
1	Dominion Energy	5/22/07	ML071450314
2	Dominion Energy	5/23/07	ML071450317
3	Westinghouse	5/30/07	ML071550055
4	Nuclear Energy Institute (NEI)	7/19/07	ML072040025
5	Southern States Nuclear Training Association (SSNTA)	7/20/07	ML072060071
6	Entergy	7/20/07	ML072060072
7	Progress Energy	7/23/07	ML072190100
8	Duke Energy	7/23/07	ML072190109

NUREG-1021 Section	Source	Comment/Recommendation	Resolution
201	SSNTA Duke Energy	Delete the sentence that has the NRC request information concerning training and testing on significant procedure changes that occur after a procedure freeze but prior to licensing. Training and testing on major procedure changes are routinely performed without NRC review.	No change made. If there is a significant change in the plant or procedures after the freeze, but prior to licensing, the NRC needs to be informed. See example provided concerning emergency operating procedures.
	SSNTA	Prior to exam development is too soon to identify simulator procedure freezing needs. In many cases, this is not known this early.	Deleted phrase "prior to examination development." The licensee and NRC will negotiate a mutually acceptable plan for freezing procedures.
	NEI	Should the "freezing" of plant procedures also include the "freezing" of the plant simulator model? Recommend including similar wording that supports freezing of both the simulator model and procedures at the same time.	No change made. Freezing the simulator is a complex issue, and will be reviewed on a case-by-case basis.
	NEI	The limited use of surrogates will create an additional burden on the training of new candidates. Instead of training in pure crews of 3 individuals, the candidates will need to train with a variety of crew compositions. This also will lead to a disparity in the number of scenarios each candidate will receive. Some will see the minimum number of scenarios, some will see N+1. Recommend softening the wording to include a maximum possible number of scenarios for various combinations of SRO instants, SRO upgrades, and ROs. Clearly state a minimum and maximum number of scenarios for various combinations of candidate types and class sizes, using a table format. Goal should be to minimize unnecessary over-exposure to excessive number of scenarios simply because of restricting use of surrogates.	No change made. Although dynamic simulator scenarios are conducted on a crew of applicants, each applicant is individually evaluated. Licensees still have an input on the selection and make-up of crews that will be used during the NRC examination. There can be a disparity in the number of scenarios and events each applicant is exposed to, even without the new policy on surrogates, and one extra scenario is not considered excessive. Also, the grading policy on scenarios takes into account the number of events an applicant is exposed to. Due to the countless possibilities for class sizes and applicant make-ups, a table of specific examples was not developed. Surrogate operators can complicate the licensing decision, by participating too much or too little during a scenario. Limiting surrogates is a reasonable goal.

NUREG-1021 Section	Source	Comment/Recommendation	Resolution
201	Progress Energy	Instead of informing applicants which procedures are frozen to which revision, it would be best to establish a time when procedures are frozen. Notifying a candidate that they are looking at the wrong procedure revision could indicate the examination has a question on that procedure.	Added text to inform applicants of the procedure freeze date.
202	Staff	Section C.2.a refers to blocks A.4 and A.5 on Form 396. I believe these block numbers may have changed, and may require updating.	Changed reference to blocks A.2 through A.10 on Form 396.
204	Progress Energy	Delete wording for item D.1.e which discusses research reactor startups for cold license training. This wording was deleted in ES-202.	Deleted research reactor startups from item D.1.e. This was discussed with the Office of New Reactors.
301	SSNTA Duke Energy	Security event procedures are in many cases safeguards information. The inclusion of this topic in the exam adds the potential for the loss of control of the information. This topic should not be included as a testable topic.	Added text that security event procedure test items should not contain safeguards information. Non-safeguards security event information is a valid, testable topic.
	SSNTA	Due to shifting of topics from Conduct of Operations to Equipment Control, it will be significantly more difficult to develop RO job performance measures (JPMs) in Conduct of Operations. Recommend changing the distribution of administrative JPMs to Conduct of Operations: RO = 1 (or 0) and SRO & retakes = 1; and in Equipment Control: RO = 1 (or 2) and SRO & retakes = 2.	No change made. Conduct of Operations did lose 6 topics to Equipment Control; however, Conduct of Operations also gained 11 topics, with 7 of those topics from Equipment Control.
	NEI	Does the random selection of JPMs from past NRC examinations apply only to Control Room/In-Plant JPMs? To Administrative JPMs? Recommend clearly stating which JPMs this statement applies to.	No change made. Forms ES 301-1 and 301-2, which are referenced in the next sentence, clearly indicate that the random selection of JPMs from past NRC examinations is required for both the Administrative Topics and Control Room/In-Plant walkthroughs.
	NEI	The methodology for the random selection of JPMs from past NRC examinations is flawed in that it imposes a selection process on a portion of the operating exam that can dictate how the rest of the operating exam is developed in order to avoid 'overlap' issues. In the past, the selection of events for either portion of the operating test was deliberate, not random. Also, in the case of the administrative JPMs, it is allowable for 2-3 of the RO Admin JPMs to be on the SRO exam. Recommend a wording change: "When selecting JPMs for this exam from JPMs that have been used on the previous two NRC exams, ensure the integrity of the current exam is not compromised by the overuse of the same JPMs in successive exams."	No change made. Randomly selecting JPMS from past NRC examination was already in-place in Revision 9, on Forms ES 301-1 and 301-2. The text was added to the body of ES-301 to reinforce what was on the forms. There already exists a selection process for operating exam test items, including JPM safety functions, number of alternate path JPMs, the number of bank JPMs allowed, etc. The random selection of JPMs from past NRC examinations does not adversely affect this selection process. In order to prevent predictability on NRC examinations, the random selection requirement will remain in-place. The suggested wording change is ambiguous when compared to a limit on the number of repeat JPMs that are randomly selected.

NUREG-1021 Section	Source	Comment/Recommendation	Resolution
301	Progress Energy	References to the Administrative Topic "Emergency Plan" should read "Emergency Procedures/Plan" to reflect the title in section 2.4 of the K/A catalogs.	Change made. All references to the Administrative Topic "Emergency Plan" have been changed to "Emergency Procedures/Plan"
	Dominion	It was difficult to develop a "low power" scenario that did not run excessively long, due to lengthy crew pre-briefings and lengthy plant maneuvers. Also the crew in the plant would have an extra operator at the feed station during portions of the startup, and the risk of a feed station related reactor trip is also significant, potentially invalidating portions of the scenario. We are already required to test applicants at low power/shutdown conditions during the JPM exam. Is it possible to remove the definition of "low power" from section D.5.c and allow operating test scenarios to be at 25%, 50%, etc.?	No change made. The low power scenario requirement was in-place in Revision 9 of NUREG-1021, and was not considered for any changes in Supplement 1. The NRC still believes that a crew should have the potential to be tested at low reactor powers during the dynamic simulator scenario portion of an operating test. Pre-briefings can often times be conducted ahead of time, for example, while one crew is performing the scenario, the next crew can conduct their pre-briefings.
302 pg. 4	NEI	See previous comment regarding surrogate operators in ES-201.	See previous resolution.
401	SSNTA Duke Energy	The statement in Attachment 2 paragraph 1, "The remaining Section 2 K/As may be excluded from the random selection process and/or rejected without explanation or justification," was not incorporated into the body of ES-401. This deletion was not described in the list of changes. Was this an oversight or was this statement deleted intentionally? Why?	This statement was deleted intentionally. Supplement 1 changes the way Section 2 K/As will be selected. Instead of picking from all Section 2 K/As, with a requirement not to screen out certain K/As, Supplement 1 provides a list of Section 2 K/As to pick from.
	SSNTA Duke Energy	The note following paragraph 2 of Attachment 2 was not incorporated into the body of ES-401. Was this an oversight or was this note deleted intentionally? Why?	The note was intentionally deleted. The information in this note is also located in Section D.2, item a.
	NEI	What safety function is to be associated with the new K/As for Generator Voltage and Electric Grid Disturbances?	Safety Function 6, which has been added to the text.
	Dominion	Recommend adding "evolutions" to Note 3 on Forms ES-401-1 and 401-2, such that it reads: "...operationally important, site-specific systems/ <i>evolutions</i> that are not included on the outline should be added."	Change made. Added "evolutions" to the text of Note 3 on the forms.
	Western Technical Services, via e-mail to the staff	ES-401 requires 25 topics associated with 10 CFR 55.43 for the SRO examination, but there are 43 Generic Topics listed on page 4 that must be included in the random selection for Tier 1 and Tier 2. For the SRO examination, are we required to include all 43 of those topics, or include topics from that list with relationships to 10 CFR 55.43?	All 43 topics must remain in the population when selecting Tier 1 and 2 generics on both the RO and SRO exam. This has been added to the text in ES-401. If the random selection process lands on a generic not linked to 10 CFR 55.43 and the facility does not have a SRO-specific learning objective for that topic, you may manually reject that K/A statement, explain why it was rejected, and randomly select another statement from the list.

NUREG-1021 Section	Source	Comment/Recommendation	Resolution
402	SSNTA NEI	The 2 new paragraphs in Section E will require a significant increase in the post-examination workload, with little benefit. It should not be required to submit applicant docket numbers with their post-examination comments. Applicants should remain anonymous. This is not the appeal process.	Examinations with post-examination comments often result in applicant appeals. The submittal of applicant post-examination comments should not be suppressed, and the NRC needs to know which applicant made which comment(s). The extra work done immediately after the examination will require less work during the appeal process. Added wording to ES-402 and ES-501 to protect the docket number of individual applicants.
	Progress Energy	Requiring the submittal of the applicant's docket number with his post-exam comment may limit feedback from the applicants. Delete the requirement to supply applicant docket numbers.	Added wording to ES-402 and ES-501 to protect the docket number of individual applicants. The NRC does not agree that this change will limit applicant feedback. The staff will consider deleting this requirement in the future if applicant feedback is affected.
403	NEI SSNTA Region I	Why would a question for which a reference is determined to be required during administration be less likely to result in examination changes? What if, in hindsight, a reference should have been provided? This addition is unnecessarily restrictive and appears to provide more opportunity for appeals, not less as it appears to be intended. Recommend deleting this bullet.	No change made, based upon previous agreement between the NRC and the facility that the question should be closed reference. Also the wording is "less likely," so if a reference was truly needed, a post-examination change can still occur.
	Progress Energy	Item D.1.b – Post exam changes should be allowed if additional or unknown information is identified that proves an exam answer incorrect or correct. It should not matter if the NRC and facility previous agreed that the exam met the requirements of NUREG-1021.	This is captured in the text of ES-403 item D.1.b, 3 rd bullet, which states that newly discovered information that supports a change in the answer key will most likely result in exam changes.
603	SSNTA Duke Energy	Reword last two sentences of item C.1.d. Need to revise to state JPMs that incorporate immediate action steps from memory should only be used if they provide adequate evaluation components. Additional non-memory JPM steps may be required if the immediate action steps do not provide adequate evaluation criteria (or similar wording). A JPM solely comprised of immediate memory actions can provide sufficient evaluation and should be allowed without requiring additional non-memory steps.	No change made. Testing only immediate action steps does not test understanding. Testing understanding on operating tests is required per 10 CFR Part 55.

NUREG-1021 Section	Source	Comment/Recommendation	Resolution
605	SSNTA	3 rd bullet, in item C.1.f - concerned over the requirement for the 40 hours reactivation time to be conducted in the same calendar quarter. Utilities desire reactivation when available and would not want to wait to align with quarter. Add words to ensure the proper proficiency time is logged after reactivation if necessary to meet NRC needs, but don't limit the 40 hours to one quarter. (example: operator wants to reactivate on March 29...shouldn't have to wait until 40 hours can be obtained in April.)	Change made. Reactivation should be completed in a reasonable time frame (e.g., 30 days) and once reactivated, the license remains active for the remainder of that calendar quarter, and the subsequent calendar quarter.
	NEI Region I	References to Form 398 are incorrect, and should be changed to Form 396.	Changed 398 to 396.
	Region I	<p>I would think that we would want licensees to report sooner than the next renewal (5 or more years) any prescribed medications for long-standing, existing medical conditions, such as diabetes or hypertension. In addition, the last sentence, "A new NRC Form 396 would also be required if the operator develops a new permanent physical or mental condition," seems to conflict with the "next renewal" guidance.</p> <p>Finally, to be consistent, I would recommend that we request our licensees to report all medical conditions not previously reported that require medications to control potentially debilitating conditions so that their individual licenses can be properly conditioned.</p>	No change made. Medications for existing conditions are to be reported at the next renewal, unless they are for a new disqualifying condition. New disqualifying conditions are always reportable within 30 days in accordance with 10 CFR 55.25.

NUREG-1122 [1123] Reference	Source	Comment/Recommendation	Resolution
Knowledge/Ability (K/A) # 2.1.14	Entergy	While the need to perform plant announcements is important, I do not see the validity in testing our operators on the requirements to make said announcements. This appears to have low significance when compared to implementing actions necessary to ensure safe operations.	No change made. K/A was not identified for deletion by the Owners Groups, which included a survey of this K/A's importance.
K/A # 2.1.15	Entergy	While having knowledge of standing orders or memos is valuable, I do not see the relevance to understanding approved procedural guidance that ensures we operate the plant in a safe manner. We are allowed or permitted to operate the facility based on a memo or standing order.	No change made. K/A was not identified for deletion by the Owners Groups, which included a survey of this K/A's importance.
# 2.1.26	Entergy	While applying industrial safety rules and guidelines (OSHA) is appropriate, I do not see the significance of testing our operators on industrial safety principles that are in place for our safety versus nuclear safety. NRC is tasked with observing and commenting on industrial safety but OSHA governs these rules.	No change made. K/A was not identified for deletion by the Owners Groups, which included a survey of this K/A's importance.
# 2.1.45	WOG	Change the word "indicator" to "indication": "Ability to identify and interpret diverse indications to validate the response of another indicator <i>indication</i> ."	Change made.
# 2.2.4	WOG	Change the word "board" to "room": "(multi-unit license) Ability to explain the variations in control board <i>room</i> layouts, systems, instrumentation, and procedural actions between units at a facility."	K/A changed to: "Ability to explain the variations in control board / control room layouts..."
# 2.2.25	NEI	Based on increasing the importance rating on items such as 2.2.25, "Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits," does this mean that reactor operator candidates will be required to know Technical Specification bases? If so, this is a significant change in job scope.	Importance rating under current revision of NUREG-1122 [and -1123] for reactor operators was > 2.5, so topic was already eligible for testing. Change in importance rating does not affect how this topic should be randomly sampled.
Note between K/As 2.4.2 and 2.4.3	NEI	What is this note supposed to be related to? Please clarify the note.	Note between K/As 2.4.2 and 2.4.3 determined to be unnecessary. Note deleted.

NUREG-1122 [1123] Reference	Source	Comment/Recommendation	Resolution
# 2.4.3	Entergy	I agree that our operators must be able to monitor and interpret post-accident instrumentation. However, I am confused by the term identify. In the SAT process that term means knowledge of or ability to recognize a condition which qualifies as level 1 memory type question. I would expect to see a statement such as "Ability to monitor or interpret post-accident instrumentation," which gives the ability to write level 2 or 3 questions.	No change made. The wording of this K/A will be left as specified by the Owners Groups, which included a survey of this K/A's wording and importance.
# 2.4.28	SSNTA Duke Energy	Delete this K/A. Security procedures are safeguards information. Including the evaluation of those procedures in the exam creates the potential for loss of control of the information due to the need to provide copies of the procedures for training, study, and reference. Training and evaluation of security procedures should be left up to the station as part of the qualification program for newly licensed operators.	K/A not deleted. This K/A was not identified for deletion by the Owners Groups, which included a survey of this K/A's importance. Added text: non-safeguards information.
Section 1.8, 2 nd paragraph	Progress Energy	"Temporary modification procedures" should not be listed as an example of "Conduct of Operations" K/As, since temporary modifications of procedures are now addressed by the "Equipment Control" K/As.	Change made. "Temporary modification of procedures" removed from the description of generic K/As for "Conduct of Operations."
All of Section 3, "Plant Systems"	NEI	Why were the Category A2 K/A statements not revised to include reference to 10 CFR 55.43(b), as noted in NUREG-1021 ES-401? This has always been an error likely situation for those that do not know what is contained in ES-401.	No change made. Will still rely on using NUREG-1021 along with NUREG-1122 [and -1123] when developing examinations.