July 19, 2002

MEMORANDUM TO: Christopher I. Grimes, Program Director
Policy and Rulemaking Program
Division of Regulatory Improvement Programs, NRR

FROM: Peter C. Wen, Project Manager ***/RA/***
Policy and Rulemaking Program
Division of Regulatory Improvement Programs, NRR

SUBJECT: NOTICE OF MEETING WITH NUCLEAR ENERGY INSTITUTE (NEI) ON OPERATOR LICENSING ISSUES

DATE & TIME: August 29, 2002
9:00 a.m. - 2:00 p.m.

LOCATION: U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852
Room O-14B6

PURPOSE: To discuss issues related to 10 CFR 55 and the operator licensing program. A preliminary agenda is attached (Attachment 1). Also attached is a summary of possible long-term examination process changes (Attachment 2). See http://www.nrc.gov/reactors/operator-licensing.html for related meeting summaries and other background information.

PARTICIPANTS*:

NRC		NEI/UTILITY
B. Boger	T. Quay	J. Davis
D. Trimble	R. Conte	R. Evans
M. Ernstes	D. McNeil	Operator Licensing
T. Gody		Focus Group Members

CATEGORY: This is a Category 2 Meeting. The public is invited to participate in this meeting by discussing regulatory issues with the NRC at designated points identified on the agenda.

Project No. 689
Attachments: As stated
cc: See list

*Meetings between NRC technical staff and applicants or licensees are open for interested members of the public, petitioners, interveners, or other parties to attend pursuant to the Commission Policy Statement on "Staff Meetings Open to the Public: Final Policy Statement," 67 *Federal Register* 36920, May 28, 2002. Members of the public who wish to attend should contact S. Guenther at (301)415-1056 or sxg@nrc.gov.

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D Trimble
S Guenther
R Conte, RI
M Ernstes, RII
D McNeil, RIII
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AHsia, RES
PMNS (ask to post agenda - Attachment 1)

cc: Mr. Ralph Beedle
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PRELIMINARY AGENDA FOR NRC/NEI
MEETING ON OPERATOR LICENSING ISSUES

August 29, 2002; 9:00 a.m. - 2:00 p.m.
11555 Rockville Pike, Rockville, MD 20852-2738

	TOPIC	LEAD
●	Introductions and Opening Remarks	NRC/NEI
●	NRC Experience Since the Last Meeting	NRC
●	Industry Experience Since the Last Meeting	NEI
●	Public Input	Public
●	Proposed Long-term Examination Options - Refer to Attachment 2	NRC/NEI
●	Operator License Eligibility Issues	NRC/NEI
●	Generic Fundamentals Examination Issues	NRC/NEI
●	Reactivity Manipulation Rule Change Implementation	NRC
●	OMB Clearance Burden Estimates	NRC
●	Public Questions and Answers	Public
●	Summary / Conclusion / Action Item Review	NRC/NEI

Note: This is a Category 2 Meeting. The public is invited to participate in this meeting by discussing regulatory issues with the NRC at designated points identified on the agenda. Refer to http://www.nrc.gov/reactors/operator-licensing.html for related meeting summaries and other background information.

ATTACHMENT 1

PROPOSED REVISION 9 CHANGE SUMMARY

OVERVIEW

The proposed changes summarized below are a refinement of possible long-term changes discussed during previous meetings with the NEI operator licensing focus group. The overall goal of these changes is to increase efficiency, effectiveness, and public confidence, while reducing unnecessary regulatory burden and maintaining safety. This summary has been enclosed with this meeting notice to promote further discussion related to the development of Revision 9 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." Although the proposed changes have been reviewed with NRC management, they have not received final management approval.

WRITTEN EXAMINATION

1. Shorten the RO exam to 75 questions by proportionally reducing every Tier and Group of the exam outline to approximately 75 percent of its current length. The 75 questions would be distributed as follows:

RO WRITTEN EXAM OUTLINE				
	Group 1* (B / PWR)	Group 2* (B / PWR)	Group 3* (B / PWR)	Total
Tier 1 (E/APEs)	10 / 12	14 / 13	3 / 2	27
Tier 2 (Systems)	21 / 17	14 / 15	3 / 6	38
Tier 3 (Generic)	n/a	n/a	n/a	10
Total	n/a	n/a	n/a	75
*Note that Group 3 would be eliminated under Proposal 2 below and the Group 1 and 2 sampling rates would be adjusted based on their risk-informed contents. Test no more than 2 K/A topics related to any system or E/APE.				

RATIONALE: This change would provide a significant (approximately 20%) reduction in the burden for facility licensees and the NRC staff to develop, review, and grade the examinations. Data shows that examinations containing approximately 80 questions have sufficient reliability. Since the number of questions on an examination is only *one* factor affecting its reliability, simply lowering the number of questions from 100 to 75 should have minimal impact, as long as other test practices remain in place. The NUREG-1021 criteria related to examination content, levels of knowledge tested, level of difficulty, uniformity of format (e.g., number of items, time, directions, and scoring), adherence to psychometric guidelines, and common training and instructions for test developers, will not be changing, so test reliability can be reasonably assured.

2. Risk inform the system and E/APE tiers by reassigning each item into either a high safety-significant or low safety-significant group (as opposed to the three groups per tier

today) based on risk insights and by adjusting the sampling rate for each group, as appropriate, but without changing the Tier totals. Note that the table in Proposal 1 does not reflect this recommended change; generic BWR and PWR group assignments and sampling rates are being developed.

RATIONALE: The basis for assigning each system and E/APE to a specific group was not documented when the existing outlines were developed in the mid-1980s. The outlines predate both the probabilistic risk assessment (PRA) and individual plant examination (IPE) programs and will benefit from an application of those insights. This change may mitigate the industry's complaints that some systems and evolutions with low safety significance are being over-sampled.

3. The SRO exam would remain unchanged at 100 questions, including all 75 RO exam questions plus an additional 25 questions that focus on the SRO-level items in 10 CFR 55.43. All SRO applicants would take the entire exam; we would not waive the RO portion for upgrade applicants or the passed portion for retake applicants. Although the overall cut score would remain 80%, applicants would have to achieve a minimum score of 70% on the 25 SRO-level questions. The 25 SRO-level questions would be distributed as follows among the RO Tiers and Groups (i.e., the existing SRO outlines would be eliminated):

SRO WRITTEN EXAM OUTLINE						
	Group 1*	Group 2*	Group 3*	SRO Total	RO Total	Overall Total
Tier 1	4	4	1	12	27	39
Tier 2	3	2	1	6	38	44
Tier 3	n/a	n/a	n/a	7	10	17
Total	n/a	n/a	n/a	25	75	100
*Note that Group 3 would be eliminated under Proposal 2 and the Group 1 and 2 sampling rates would be adjusted based on their risk-informed contents.						

The additional, SRO-level questions would be based on the subset of K/As that are linked to 10 CFR 55.43 (or have an SRO-specific facility learning objective). Therefore, absent a site-specific priority, the Tier 1 and 2 questions will be limited to the following K/A Categories:

A2 Ability to (a) predict the impacts of the following malfunctions or operations on the [system]; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations... [Note that this K/A Category in the BWR Catalog does not include links to 55.43; this is believed to have been an oversight when the catalog was last revised.]

A/EA2 Ability to determine and interpret the following as they apply to the [abnormal or emergency plant evolution]...

G The eight "old system-generic" K/A statements from Section 2 of the K/A Catalog that are linked to 55.43.

RATIONALE: Restructuring the SRO exam as an "add-on" to the RO exam rather than a separate outline with slightly different system and E/APE groupings should simplify the development process and improve efficiency without significantly affecting validity. Focusing the K/A selection on those categories that are linked to 10 CFR55.43 should also simplify and clarify the development process and increase emphasis on critical SRO skills. Although the overall Tier 1 / 2 weighting will shift slightly from 43/40 (in the current outline) to 39/44, the staff believes that the increased emphasis on Tier 2 (systems) Category A2 (i.e., predict and mitigate the impacts of malfunctions) should compensate. The SROs' overall weighting in Tier 3 will remain unchanged at 17% of the exam.

4. Most other aspects of the written exam would remain essentially unchanged: the percentage limits on bank use would remain at approximately 75/15/10 (i.e., something on the order of 55/10/10 bank / modified / and new questions for the RO exam and 15/5/5 for the SRO exam); the range of higher cognitive level questions would still be 50-60% for the RO exam, but the SRO exam could exceed 60% because the K/A categories emphasized on the SRO exam lend themselves to higher cognitive level questions; the time allowed to take the RO exam could be shortened, but since this is not a "power" exam, giving the applicants too much time is not an issue; the cut scores would remain 80%, overall, with a 70% minimum on the SRO-level questions; and the threshold for triggering a validity review would be lowered from 10% to 5 question deletions in light of the smaller sample size.

OPERATING TEST

Note that Items 1 - 5 below are being considered without regard to the remaining items. However, Item 6, which addresses a combination of staff and industry concerns, is viewed as a package that should be adopted or rejected in its entirety.

1. Eliminate the option of using prescripted questions to test the administrative topics, and require the entire walk-through to be based on job performance measures (JPMs).

   RATIONALE: JPMs have been the preferred (performance-based) testing medium for the administrative topics since Interim Revision 8 was issued in January 1997, and the use of questions has declined substantially over the years. From a testing and measurement standpoint, it is preferable not to mix testing media among items that are graded together; moreover, allowing both types of test items to be used has not been conducive to inter-regional/facility consistency. Although it is true that some administrative topics are not easily tested with JPMs, the staff believes that the benefits of this change outweigh the drawbacks. Note that the staff has discussed this possible change during recent industry focus group meetings, and there were no significant objections.

2. Eliminate the requirement to test every RO applicant on all four administrative topics (i.e., conduct of operations, equipment control, radiation control, and emergency plan). Allow the examination author to distribute the five administrative JPMs (refer to Item 1) among the four topics, making sure to cover at least three topics, including conduct of operations and equipment control, for every applicant. The SRO requirements would remain unchanged.

RATIONALE: This change would increase flexibility and mitigate concerns that it is difficult to generate test items that discriminate at the RO level, when ROs' responsibilities related to radiation control and the emergency plan are not significantly distinguishable from those of non-licensed workers. Note that the staff has discussed this possible change during recent industry focus group meetings, and there were no significant objections.

3. Revise the process for grading the administrative topics by implementing an overall 80% cut score (instead of grading each topic separately and then applying a "one may, two shall" criterion to determine if the unsatisfactory topic grades justify an overall failure).

   RATIONALE: This change would eliminate some of the subjectivity involved in grading the administrative topics and simplify the process overall. Note that the staff has discussed this possible change during recent industry focus group meetings, and there were no significant objections.

4. Eliminate the requirement to include normal evolutions on every dynamic simulator (i.e., Category C) operating test. The examination author would have the option of substituting an additional instrument or component malfunction for every normal evolution (including reactivity changes) that is eliminated.

   RATIONALE: During recent focus group meetings, facility licensees have argued that the normal evolutions (particularly the reactivity change) are in large measure redundant to the JPMs in Category B, that they increase the predictability of the test, that they are time consuming to administer, and that they rarely contribute in a significant way to operating test failures. The staff acknowledges these observations and further notes that this change will increase flexibility without diminishing the scope or content of the operating test, since the total number of evolutions will remain unchanged.

5. Clarify the grading instructions for the dynamic simulator (Category C) operating test to incorporate the following generic guidance:

   a. If there is no basis upon which to grade a rating factor, score it as "not observed," normalize the weighting for the remaining rating factors, and explain in the test comments. This practice will be limited to no more than two rating factors per applicant; greater use might necessitate a test validity assessment.
   b. If an applicant performs activities related to a rating factor and makes no errors, assign a score of "3" for that rating factor.
   c. If an applicant makes a single error related to a rating factor, assign a score of "2" for that rating factor, unless the error was a critical task, in which case a score of "1" would be required.
   d. If an applicant makes two non-critical errors related to a rating factor, assign a score of "1" for that rating factor unless a score of "2" can be justified (and documented) based on correctly performing another activity (or activities) related to the same rating factor; three or more non-critical errors require a score of "1" unless an exception is approved by the operator licensing program office.

   RATIONALE: Applicants should not be assigned a no-fault score of "3" for a rating factor that was not tested because of a shortcoming in the design or administration of the simulator scenarios. Aside from requiring a score of "1" for missing or incorrectly performing a designated critical task, the grading guidance (including the behavioral

anchors) is generally vague and largely dependent on examiner judgment. The staff believes that the proposed clarifications are not inconsistent with the current grading instructions (i.e., an examiner can currently recommend a grade of "1" if the applicant committed multiple non-critical errors related to a rating factor) and that they will improve consistency and increase public confidence.

6. a. Combine Categories A (Administrative Topics) and B (Control Room and In-Plant Systems) of the walk-through into a single test category consisting of 15 JPMs for RO and instant SRO applicants and 10 JPMs for upgrade SROs; prescripted administrative questions would no longer be used as a testing medium (refer to Item 1 above). The JPMs would be distributed as follows:

License Level ↓	Walk-Through Subcategories			Total
	A.1 - Admin.	A.2 - CR Systems	A.3 - Plant Systems	
RO	4	8	3	15
SRO-I	5	7	3	15
SRO-U	5	3	2	10

The administrative JPMs would be distributed among the existing topics; ROs would only have to cover three of the four topics (as in Item 2 above) and SROs would continue to double-up on "conduct of operations." The concept of "alternate path" JPMs would only apply to the systems tasks, and the specific number would be replaced with a range of 4-6 for RO and SRO-I applicants and 2-3 for SRO-Us. Other test criteria (e.g., safety function distribution, 80% limit on bank use, low power tasks, RCA entry, etc.) will generally continue in effect based upon the total number of walk-through tasks. The combined walk-through would get a single "S or U" grade with an overall cut-score of 80% (i.e., 12/15 for RO and SRO-I; 8/10 for SRO-U); additionally, SRO applicants must score at least 60% in the administrative subcategory (3/5 JPMs) to pass the test.

RATIONALE: This proposed change is responsive to the industry's concern that initial license applicants are being over-tested in the administrative area. This issue has been discussed during a number of public focus group meetings during which the industry has suggested eliminating the administrative test items altogether or including them with the 10 tasks that are currently evaluated during Category B. Although the staff has concluded that the industry's concerns have some merit, it is opposed to eliminating the administrative items from the operating test (given that they are required by 10 CFR 55.45 and the number of LERs involving administrative tasks) or increasing the scope of Category B without increasing the number of test items in that category. Combining the two test categories as discussed above will de-emphasize the administrative topics without changing the overall scope or length of the walk-through. Moreover, shifting the focus of the RO test toward systems and away from admin is more consistent with their job responsibilities. Specifying a range of alternate path JPMs rather than a specific percentage will promote testing at the understanding

level and increase flexibility. Most other aspects of the test will remain unchanged.

b. Review and consolidate the competencies and rating factors used to evaluate operator performance during the dynamic simulator (Category C) operating test. The RO competencies could be decreased from six to four, and the SROs' from eight to six, as illustrated in the attached draft revisions. The weighting factors associated with the revised rating factors were selected to be as consistent as possible with those assigned to the equivalent current rating factors. Note that the behavioral anchors have been omitted and will be edited to conform with the new rating factors.

RATIONALE: The staff believes that the existing competencies and rating factors suffer from excessive fragmentation and overlap. This is a problem when developing the tests because the limited set of evolutions and malfunctions are supposed to enable examiners to evaluate the applicants on every rating factor and competency. Moreover, applicants often make errors that could be applied to multiple rating factors and competencies depending on the examiner's assessment of the root cause of the deficiency. Although the guidance currently limits examiners to grading their applicants down on no more than two rating factors for most errors, combining some of the rating factors should improve grading consistency overall.

DRAFT REVISED RO COMPETENCIES

1. INTERPRET / DIAGNOSE EVENTS AND CONDITIONS BASED ON ALARMS, SIGNALS, AND READINGS

   DID THE APPLICANT:

   (a) RECOGNIZE and VERIFY off-normal trends and status? [0.40]
   (b) Correctly INTERPRET / DIAGNOSE plant conditions based on control room indications? [0.30]
   (c) ATTEND to ANNUNCIATORS and ALARM SIGNALS and INSTRUMENT READINGS in order of importance and severity? [0.30]

2. COMPLY WITH AND USE PROCEDURES, REFERENCES, AND TECHNICAL SPECIFICATIONS

   DID THE APPLICANT:

   (a) REFER TO the appropriate procedure or reference in a timely manner? [0.20]
   (b) RECOGNIZE EOP ENTRY CONDITIONS and carry out appropriate immediate actions without the aid of references or other forms of assistance? [0.30]
   (c) COMPLY WITH procedures (including precautions and limitations) and references in an accurate and timely manner? [0.30]
   (d) RECOGNIZE plant conditions that are addressed in technical specifications? [0.20]

3. OPERATE THE CONTROL BOARD

   DID THE APPLICANT:

   (a) LOCATE and MANIPULATE CONTROLS in an accurate and timely manner? [0.40]
   (b) Demonstrate KNOWLEDGE of SYSTEM OPERATION, including set points, interlocks, and automatic actions? [0.30]
   (c) Take MANUAL CONTROL of automatic functions when appropriate? [0.30]

4. COMMUNICATE AND INTERACT WITH OTHER CREW MEMBERS

   DID THE APPLICANT:

   (a) PROVIDE clear and accurate INFORMATION on system status to others for the performance of their jobs? [0.33]
   (b) Effectively RECEIVE INFORMATION from others (including requesting, acknowledging, and attending to information)? [0.33]
   (c) CARRY OUT the INSTRUCTIONS of the supervisor successfully? [0.33]

DRAFT REVISED SRO COMPETENCIES

1. INTERPRET / DIAGNOSE EVENTS AND CONDITIONS BASED ON ALARMS, SIGNALS, AND READINGS

   DID THE APPLICANT:

   (a) RECOGNIZE and ATTEND to off-normal trends and status in order of their importance and severity? [0.20]
   (b) Ensure the collection of CORRECT, ACCURATE, and COMPLETE information and reference material on which to base diagnoses? [0.20]
   (c) Demonstrate, through directives and actions, an UNDERSTANDING of how the PLANT, SYSTEMS, and COMPONENTS OPERATE AND INTERACT (including set points, interlocks, and automatic actions)? [0.30]
   (d) Correctly INTERPRET / DIAGNOSE plant conditions based on control room indications? [0.30]

2. COMPLIANCE WITH AND USE OF PROCEDURES AND REFERENCES

   DID THE APPLICANT:

   (a) REFER to correct procedures, procedural steps, and references when appropriate? [0.20]
   (b) RECOGNIZE EOP ENTRY CONDITIONS and direct appropriate immediate actions without the aid of references or other forms of assistance? [0.40]
   (c) USE PROCEDURES CORRECTLY, including following procedural steps in correct sequence, abiding by procedural cautions and limitations, selecting correct paths on decisions blocks, and correctly transitioning between procedures? [0.40]

3. OPERATE THE CONTROL BOARDS

   DID THE APPLICANT:

   (a) LOCATE and MANIPULATE CONTROLS in an accurate and timely manner? [0.33]
   (b) Demonstrate KNOWLEDGE of SYSTEM OPERATION, including set points, interlocks, and automatic actions? [0.33]
   (c) Take MANUAL CONTROL of automatic functions when appropriate? [0.33]

4. COMMUNICATE AND INTERACT WITH THE CREW AND OTHER PERSONNEL

   DID THE APPLICANT:

   (a) Communicate in a clear, easily-understood manner? [0.40]
   (b) Keep crew members and those outside the control room informed of plant status? [0.40]
   (c) ENSURE RECEIPT of clear, easily-understood communications from crew and others? [0.20]

5. DIRECT SHIFT OPERATIONS

DID THE APPLICANT:

(a) Take TIMELY and DECISIVE ACTION that demonstrated appropriate CONCERN for the SAFETY of the plant, staff, and public? [0.30]
(b) Remain ATTENTIVE to control room indications, stay in a position of OVERSIGHT, and provide an APPROPRIATE AMOUNT of DIRECTION and GUIDANCE that facilitated CREW PERFORMANCE? [0.30]
(c) SOLICIT and INCORPORATE FEEDBACK from the crew to foster an effective, team-oriented approach to problem solving and decision making? [0.20]
(d) Ensure that CORRECT and TIMELY ACTIVITIES (including diagnosis, procedural implementation, and control board operations) were carried out BY THE CREW? [0.20]

6. COMPLY WITH AND USE TECHNICAL SPECIFICATIONS

DID THE APPLICANT:

(a) RECOGNIZE when conditions were covered by technical specifications (TS)? [0.40]
(b) LOCATE the appropriate TS quickly and efficiently? [0.20]
(c) Ensure correct COMPLIANCE with TS and LCO action statements? [0.40]