

MAR 24 1988

Docket No. 50-336

Northeast Nuclear Energy Company  
ATTN: Mr. E. J. Mroczka  
Senior Vice President - Nuclear  
Engineering and Operations Group  
P.O. Box 270  
Hartford, CT 06141

SUBJECT: SENIOR REACTOR OPERATOR LICENSING EXAMINATIONS

Gentlemen:

SUBJECT: REACTOR OPERATOR AND SENIOR REACTOR OPERATOR LICENSING EXAMINATIONS

In a telephone conversation between Mr. M. J. Wilson, Training Coordinator and Mr. B. S. Norris, Examiner, arrangements were made for the administration of the examinations at the Millstone Unit 2 Facility.

The written and operating examinations are scheduled for the week of July 18, 1988.

In order for us to meet the above schedule, it will be necessary for the facility to furnish the approved reference material listed in Enclosure 1, "Reference Material Requirements for Reactor/Senior Reactor Operator Licensing Examinations," by May 13, 1988. Any delay in receiving properly bound and indexed reference material will result in a delay in administering the examinations. Our examinations are scheduled far in advance with considerable planning to utilize our present limited examiner manpower and to meet the examination dates requested by the various facilities. Mr. Wilson has been advised of the reference material requirements, and the examiners' names and addresses.

The facility management is responsible for providing adequate space and facilities in order to properly conduct the written examinations. Enclosure 2, "Administration of Reactor/Senior Reactor Operator Licensing Written Examinations," describes our requirements for conducting these examinations.

In addition, to better document simulator examinations, the chief examiner will have the facility simulator operator record prespecified plant conditions (i.e., plant pressures, temperatures and levels, etc.) for each simulator scenario. The candidate will be responsible for providing this information along with any appeal of his simulator operating examination. Therefore, the facility training staff should retain the simulator examination scenario information until all candidates taking the examination have either passed the operating examination or all appeals filed by the candidates who failed the operating examination have been completed.

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All senior reactor operator license applications should normally be submitted at least 30 days before the first examination date so that we will be able to review the training and experience of the candidates, process the medical certifications, and prepare final examiner assignments after candidate eligibility has been determined. If the applications are not received at least two weeks before the examination dates, it is likely that a postponement will be necessary.

The facility staff review of the written examination will be conducted in accordance with requirements specified in Enclosure 4, "Requirements for Facility Review of Written Examination."

This request for information was approved by the Office of Management and Budget under Clearance Number 3150-0101, which expires May 31, 1989. Comments on burden and duplication may be directed to the Office of Management and Budget, Reports Management Room 3208, New Executive Office Building, Washington, D.C. 20503.

Thank you for your consideration in this matter. If you have any questions regarding the examination procedures and requirements, please contact me at (215) 337-5211.

Sincerely,

**PETER W. ESELGROTH**

Peter W. Eselgroth, Chief  
PWR Section  
Operations Branch  
Division of Reactor Safety

Enclosures:

1. Reference Material Requirements for Reactor/Senior Reactor Operator Licensing Examinations
2. Requirements for Administration of Written Examinations
3. NRC Rules and Guidelines for License Examinations
4. Facility Review Requirements

cc w/enclosures:

S. E. Scace, Station Superintendent  
M. Wilson, Training Manager  
NRC Resident Inspector

bcc w/enclosures:

E. McCabe, DRP Section Chief  
B. Norris, Chief Examiner  
OL File

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Norris/ja

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Esselroth

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## ENCLOSURE 1

### REFERENCE MATERIAL REQUIREMENTS FOR REACTOR/SENIOR REACTOR OPERATOR LICENSING EXAMINATIONS

1. Existing learning objectives and lesson plans (including training manuals, plant orientation manual, system descriptions, reactor theory, thermodynamics, etc.).

Training materials should include all substantive written material used for preparing candidates for initial RO and SRO licensing. The written material should be inclusive of learning objectives and the details presented during lecture, rather than outlines. Training materials should be identified by plant and unit, bound, and indexed. Failure to provide complete properly bound and indexed plant reference material may result in canceling and rescheduling of the examinations. Training materials which include the following should be provided:

- System descriptions including descriptions of all operationally relevant flow paths, components, controls and instrumentation. System training material should draw parallels to the actual procedures used for operating the applicable system.
- Complete and operationally useful descriptions of all safety-system interactions and, where available, BOP system interactions under emergency and abnormal conditions, including consequences of anticipated operator error, maintenance error, and equipment failure.
- Training material used to clarify and strengthen understanding of emergency operating procedures.
- Comprehensive theory material that includes fundamentals in the area of theory of reactor operation, thermodynamics, heat transfer and fluid flow, as well as specific application to actual in-plant components. For example, mechanical theory material on pumps should include pump theory as well as descriptions of how these principles actually apply to major plant pumps and the systems in which they are installed (i.e., ECCS pumps, Feedwater pumps). Reactor Theory material should include descriptions that draw explicit ties between the fundamentals and the actual operating limits followed in the plant (i.e., reactor theory material should contain explanations how principles relate to the actual curves used by operators to verify shutdown margin).

2. Procedure Index (alphabetical by subject)
3. All Administrative Procedures (as applicable to reactor operation or safety)
4. All integrated plant procedures (normal or general operating procedures)
5. Emergency procedures (emergency instructions, abnormal or special procedures)
6. Standing orders (important orders that are safety related and may supersede the regular procedures)
7. Fuel-handling and core-loading procedures (initial core-loading procedure, when appropriate)
8. Annunciator procedures (alarm procedures, including set points)
9. Radiation Protection Manual (radiation control manual or procedures)
10. Emergency Plan implementing procedures
11. Technical Specifications
12. System Operating Procedures
13. Piping and Instrumentation diagrams, electrical single-line diagrams, or flow diagrams
14. Technical Data Book, and/or Plant curve information as used by operators and facility precautions, limitations, and set points (PLS) for the facility
15. Questions and answers that licensee has prepared (voluntary by licensee)
16. The following on the plant reference simulator (not applicable to non-power facilities)
  - a. List of all readily available initialization points.
  - b. List of all preset malfunctions with a clear identification number. The list should include cause and effect information. Specifically, for each malfunction a concise description of the expected result, or range of results, that will occur upon implementation should be provided. Additionally, an indication of which annunciators are to be initially expected should be given.
  - c. A description of simulator failure capabilities for valves, breakers, indicators and alarms.

- d. Where the capability exists, an explanation of the ability to vary the severity of a particular malfunction should be provided, i.e., ability to vary the size of a given LOCA or steam leak, or the ability to cause a slow failure of a component such as a feed pump, turbine generator or major valve.
  - e. An indication of modeling conditions/problems that may impact the examination.
  - f. Identification of any known Performance Test Failures not yet completed.
  - g. Identification of significant differences between the simulator and the control room.
  - h. Copies of facility generated scenarios that expose candidates to situations of degraded pressure control (PWR), degraded heat removal capability (PWR and BWR) and containment challenges (BWR) may be provided (voluntary by licensee).
  - i. Simulator instructions manual (voluntary by licensee).
  - j. Description of the scenarios used for the training class (voluntary by licensee).
17. Additional material required by the examiners to develop examinations that meet the requirements of these standards and the regulations.

The above reference material should be approved, final issues and should be so marked. If a plant has not finalized some of the material, the chief examiner shall verify with the facility that the most complete, up-to-date material is available and that agreement has been reached with the licensee for limiting changes before the administration of the examination. All procedures and reference material should be bound with appropriate indexes or tables of contents so that they can be used efficiently.

## ENCLOSURE 2

### REQUIREMENTS FOR ADMINISTRATION OF WRITTEN EXAMINATIONS

1. A single room shall be provided for completing the written examination. The location of this room and supporting restroom facilities shall be such as to prevent contact with all other facility and/or contractor personnel during the written examination. If necessary, the facility should make arrangements for the use of a suitable room at a local school, motel, or other building. Obtaining this room is the responsibility of the licensee.
2. Minimum spacing is required to ensure examination integrity as determined by the chief examiner. Minimum spacing should be one candidate per table, with a three foot space between tables. No wall charts, models, and/or other training materials shall be present in the examination room.
3. Suitable arrangement shall be made by the facility if the candidates are to have lunch, coffee, or other refreshments. These arrangements shall comply with Item 1 above. These arrangements shall be reviewed by the examiner and/or proctor.
4. The facility staff shall be provided a copy of the written examination and answer key after the last candidate has completed and handed in his written examination. The facility staff shall then have five working days to provide formal written comments with supporting documentation on the examination and answer key to the chief examiner or to the regional office section chief.
5. The licensee shall provide pads of 8-1/2 by 11 in. lined paper in unopened packages for each candidate's use in completing the examination. The examiner shall distribute these pads to the candidates. All reference material needed to complete the examination shall be furnished by the examiner. Candidates can bring pens, pencils, calculators, or rulers into the examination room, and no other equipment or reference material shall be allowed.
6. Only black ink or dark pencil should be used for writing answers to questions.

### ENCLOSURE 3

#### NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. Restroom trips are to be limited and only one candidate at a time may leave. You must avoid all contacts with anyone outside the examination room to avoid even the appearance or possibility of cheating.
3. Use black ink or dark pencil only to facilitate legible reproductions.
4. Print your name in the blank provided on the cover sheet of the examination.
5. Fill in the date on the cover sheet of the examination (if necessary).
6. Use only paper provided for answers.
7. Print your name or initials in the upper right-hand corner of the first page of each page of the answer sheet.
8. Consecutively number each answer sheet, write "End of Category     " as appropriate, start each category on a new page, write on only one side of the paper, and write "Last Page" on the last answer sheet.
9. Number each answer as to category and number, for example, 1.4, 6.3.
10. Skip at least three lines between each answer.
11. Separate answer sheets from pad and place finished answer sheets face down on your desk or table.
12. Use abbreviations only if they are commonly used in facility literature.
13. The point value for each question is indicated in parentheses after the question and can be used as a guide for the depth of answer required.
14. Show all calculations, methods, or assumptions used to obtain an answer to mathematical problems whether indicated in the question or not.
15. Partial credit may be given. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK.
16. If parts of the examination are not clear as to intent, ask questions of the examiner only.



17. You must sign the statement on the cover sheet that indicates that the work is your own and you have not received or been given assistance in completing the examination. This must be done after the examination has been completed.
18. When you complete your examination, you shall:
  - a. Assemble your examination as follows:
    - (1) Exam questions on top.
    - (2) Exam aides - figures, tables, etc.
    - (3) Answer pages including figures which are a part of the answer.
  - b. Turn in your copy of the examination and all pages used to answer the examination questions.
  - c. Turn in all scrap paper and the balance of the paper that you did not use for answering the questions.
  - d. Leave the examination area, as defined by the examiner. If after leaving, you are found in this area while the examination is still in progress, your license may be denied or revoked.

#### ENCLOSURE 4

##### REQUIREMENTS FOR FACILITY REVIEW OF WRITTEN EXAMINATION

1. There shall be no review of the written examination by the facility staff before or during the administration of the examination. Following the administration of the written examination, the facility staff shall be provided a marked-up copy of the examination and the answer key.
2. The facility will have five (5) working days from the day of the written examination to provide formal comment submittal. The submittal will be made to the responsible Regional Office by the highest level of corporate management for plant operations, e.g., Vice President for Nuclear Operations. A copy of the submittal will be forwarded to the chief examiner, as appropriate. Comments not submitted within five (5) working days will be considered for inclusion in the grading process on a case basis by the Regional Office section leader. Should the comment submittal deadline not be met, a long delay for finalization of the examination results may occur.
3. The following format should be adhered to for submittal of specific comments:
  - a. Listing of NRC Question, answer and reference.
  - b. Facility comment.
  - c. Supporting documentation.

NOTES:

1. No change to the examination will be made without submittal of complete, current, and approved reference material.
2. Comments made without a concise facility recommendation will not be addressed.