

September 6, 1988

University of Virginia
ATTN: Dr. R. U. Mulder, Director
Reactor Facility and Res.
Assistant Professor of
Nuclear Engineering
Charlottesville, VA 22901

Gentlemen:

SUBJECT: REACTOR OPERATOR AND SENIOR OPERATOR LICENSING EXAMINATIONS

In a telephone conversation between Mr. J. P. Farrar, Operations Manager and Mr. William M. Dean, NRC Region II Operator Licensing Section, arrangements were made for administration of the replacement examinations at the University of Virginia Research Reactor.

The examinations are scheduled for the week of November 14, 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 Examination," by October 1, 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. Therefore, missing the October 1, 1988 deadline, even by a few days, will likely result in a long delay, because it may not be possible to reschedule examinations at other facilities. Mr. Farrar has been advised of our reference material sets that are required, and the examiners' names and addresses where each set is to be mailed.

The facility management is responsible for providing adequate space and accommodations in order to properly conduct the written examinations. Enclosure 2, "Requirements for Administration of Written Examination," describes our requirements for conducting these examinations. Mr. Farrar has also been informed of these requirements.

Enclosure 2 also contains the Rules and Guidelines that will be in effect during the administration of the written examination. The facility management is responsible for ensuring that all candidates are aware of these Rules.

All reactor operator and senior reactor operator license application information should normally be submitted at least 60 days before the first examination dates 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 application information is not received at least 30 days before the examination dates, it is possible that a postponement will be necessary.

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This request for information was approved by the Office of Management and Budget under Clearance Number 3150-0101 which expires on 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, DC 20503.

The facility staff review of the written examination will be conducted in accordance with requirements specified in Enclosure 3, "Requirements for Facility Review of Written Examination." Mr. Farrar has been informed of these requirements.

Thank you for your consideration in this matter. If you have any questions regarding the examination procedures and requirements, please contact Mr. Kenneth E. Brockman, Chief, Operator Licensing Section 2, at 404/331-5594.

Sincerely,

(ORIGINAL SIGNED BY C. A. JULIAN)

Caudle A. Julian, Chief
Operations Branch
Division of Reactor Safety

Enclosures:

- 1. Reference Material Requirements
- 2. Requirements for Administration of Written Exams
- 3. Facility Review Requirements

cc w/encls:

J. P. Farrar, Training Supervisor

bcc w/encls:

P. Fredrickson, Section Chief, DRP
Bill Dean, OL Examiner
Document Control Desk
Commonwealth of Virginia

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PRShaw:obw
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RII
WDean
08/31/88

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08/31/88

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CAJulian
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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 will result in canceling or rescheduling of the examinations. Training materials which include the following should be provided:

- a. 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.
- b. 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.
- c. Training material used to clarify and strengthen understanding of emergency operating procedures.
- d. 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., Reactor Coolant pumps, all ECCS pumps, Recirculation pumps, Feedwater pumps and Emergency 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 of how principles relate to the actual curves used by operators to verify shutdown margin or calculate an ECP).

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 the facility licensee has prepared (voluntary by facility licensee)
16. All material different from that listed in items 1-15 that is specific to the Operator Requalification Training Program
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 duration of 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 3-ft. space between tables. No wall charts, models, and/or other training materials shall be present in the examination room.
3. Suitable arrangements 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 facility licensee shall provide pads of 8-1/2 by 11 inch 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 slide rules into the examination room, and no other equipment or reference material shall be allowed.
6. Only black ink or dark pencils should be used for writing answers to questions.

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 the paper provided for answers.
7. Print your name in the upper right-hand corner of the first page of each section 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 aids - 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 3

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 the written examination is given 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 by case basis by the regional office section chief. 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.