



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V

1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

February 15, 1990

Docket No. 50-288

Dr. Paul Bragdon, President
Reed College
Portland, Oregon 97202

Dear Dr. Bragdon:

Subject: Reactor Operator and Senior Reactor Operator Licensing Examinations

In a telephone conversation between Dr. L. Ruby, Facility Director, and Mr. T. Meadows, Chief Examiner, arrangements were made for the administration of licensing examinations at the Reed Reactor Facility.

The written examinations are scheduled for May 15, 1990. The operating examinations are scheduled for May 16-18, 1990.

To meet the above schedule, it will be necessary for you to furnish the reference material listed in Enclosure 1, "Reference Material Requirements for Reactor/Senior Reactor Operator Licensing Examinations," by March 16, 1990. Any delay in receiving approved, properly bound and indexed reference material, or the submittal of inadequate or incomplete reference material may result in the examination being rescheduled. Dr. Ruby has been advised of our reference material requirements, and the address where each set is to be mailed.

You are responsible for providing adequate space and accommodations for administration of the written examinations. Enclosure 2, "Requirements for Administration of Written Examinations," describes our requirements for conducting these examinations. Dr. Ruby has also been informed of these requirements.

Enclosure 3 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 applicants are aware of these rules.

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 Examinations." Dr. Ruby has been informed of these requirements.

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February 15, 1990

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

This request is covered by Office of Management and Budget Clearance Number 3150-0101 which expires May 31, 1992. The estimated average burden is 7.7 hours per response, including gathering, xeroxing and mailing the required material. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Records and Reports Management Branch, Division of Information Support Services, Office of Information Resources Management, U.S. Nuclear Regulatory Commission, Washington, D. C. 20555; and to the Paperwork Reduction Project (3150-0101), Office of Management and Budget, 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 Mr. Thomas Meadows at (415) 943-3867, or Mr. Lew Miller at (415) 943-3869.

Sincerely,



Dennis F. Kirsch, Chief
Reactor Safety Branch

Enclosures:

1. Reference Material Requirements for Reactor/Senior Reactor Operator Licensing Examinations
2. Requirements for Administration of Written Examinations
3. Procedures for the Administration of Written Examinations
4. Requirements for Facility Review of Written Examinations

Dr. Paul Bragdon

3

February 15, 1990

cc w/enclosures (1), (2), (3) and (4):
R. Cross, RV (2 copies)
M. Pollack, Reed College
L. Ruby, Reed College

cc w/o enclosures (1), (2), (3) and (4):
J. Martin, RV
B. Faulkenberry, RV
R. Zimmerman, RV
A. Chaffee, RV
D. Kirsch, RV
L. Miller, RV
H. Berkow, HQ PRSS
M. Cillis, RV
T. Meadows, RV
H. North, RV
S. Weiss, NRR/PDNP

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 shall include all substantive written material used for preparing candidates for initial RO and SRO licensing. The written material shall include learning objectives and the details presented during lecture, rather than outlines. Training materials shall be identified by plant and unit, bound, and indexed. FAILURE TO PROVIDE COMPLETE, PROPERLY BOUND AND INDEXED PLANT REFERENCE MATERIAL MAY RESULT IN THE RETURN OF THE MATERIAL TO THE PERSON WHO IS THE HIGHEST LEVEL OF CORPORATE MANAGEMENT WHO IS RESPONSIBLE FOR PLANT OPERATIONS (E.G., VICE PRESIDENT OF NUCLEAR OPERATIONS). ACCOMPANYING THE MATERIAL WILL BE A COVER LETTER EXPLAINING AND DEFICIENCIES IN THE REFERENCE MATERIAL AND THE FACT THAT THIS WAS THE REASON THE EXAMINATIONS WERE CANCELLED OR POSTPONE. Training materials which include the following shall 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 shall 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. Reactor Theory material shall 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. Complete Procedure Index (including surveillance procedures, etc.)
3. All administrative procedures (as applicable to reactor operation or safety)
4. All integrated plant procedures (normal or general operating procedures)
5. All emergency procedures (emergency instructions, abnormal or special procedures)
6. Standing orders (important orders that are safety related and may supersede the regular procedures)
7. Surveillance procedures (procedures that are run frequently, i.e. weekly or that can be run on the simulator)
8. Fuel-handling and core-loading procedures, (initial core-loading procedure, when appropriate)
9. All annunciator/alarm procedures
10. Radiation protection manual (radiation control manual or procedures)
11. Emergency plan implementing procedures
12. Technical Specifications (and interpretations, if available) for all units for which licenses are sought.
13. System operating procedures
14. Piping and instrumentation diagrams, electrical single-line diagrams, or flow diagrams
15. Technical Data Book, and/or plant curve information as used by operators and facility precautions, limitations, and set points (PLS) for the facility
16. Questions and answers specific to the facility training program which may be used in the written or operating examinations (voluntary by facility licensee)
17. Additional material required by the examiners to develop examinations that meet the requirements of these Standards and the regulations.

All above reference material shall be approved, final issues and shall 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 shall be used efficiently. Failure to provide complete, properly bound and indexed plant reference material could result in cancellation or rescheduling of the examinations.

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 applicant per table, with a 3 foot space between tables.
3. Suitable arrangements shall be made by the facility if the applicants are to have lunch, coffee, or other refreshments. These arrangements shall comply with Item 1 above and shall be reviewed by the examiner and/or proctor.
4. The facility licensee shall provide pads of 8-1/2 by 11 inch lined paper in unopened packages for each applicant's use in completing the examination. The examiner shall distribute these pads to the applicants.
5. Applicants may bring pens, pencils, calculators or slide rules into the examination room. Only black ink or dark pencils should be used for writing answers to questions.
6. The licensee shall provide one set of steam tables for each applicant. The examiner shall distribute the steam tables to the applicants. No wall charts, models, and/or other training materials shall be present in the examination room. No other equipment or reference material shall be allowed unless provided by the examiner.

Enclosure 3

PROCEDURES FOR THE ADMINISTRATION OF WRITTEN EXAMINATIONS

1. Check identification badges.
2. Pass out examinations and all handouts. Remind applicants not to review examination until instructed to do so.

READ THE FOLLOWING INSTRUCTIONS VERBATIM:

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. After the examination has been completed, you must sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination. This must be done after you complete the examination.

READ THE FOLLOWING INSTRUCTIONS

1. Restroom trips are to be limited and only one applicant 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.
2. Use black ink or dark pencil only to facilitate legible reproductions.
3. Print your name in the blank provided in the upper right-hand corner of the examination cover sheet.
4. Fill in the date on the cover sheet of the examination (if necessary).
5. You may write your answers on the examination question page or on a separate sheet of paper. USE ONLY THE PAPER PROVIDED AND DO NOT WRITE ON THE BACK SIDE OF THE PAGE.
6. If you write your answers on the examination question page and you need more space to answer a specific question, use a separate sheet of the paper provided and insert it directly after the specific question. DO NOT WRITE ON THE BACK SIDE OF THE EXAMINATION QUESTION PAGE.
7. Print your name in the upper right hand corner of the first page of each section of your answer sheets whether you use the examination question pages or separate sheets of paper. Initial each page.
8. Before you turn in your examination, consecutively number each answer sheet, including any additional pages inserted when writing your answers on the examination question page.

Enclosure 3

9. If you are using separate sheets, number each answer as to category and number (i.e. 1.04, 6.10) and skip at least 3 lines between answers to allow space for grading.
10. Write "End of Category ____" at the end of your answers to a category.
11. Start each category on a new page.
12. Write "Last Page" on the last answer sheet.
13. Use abbreviations only if they are commonly used in facility literature. Avoid using symbols such as $\frac{1}{2}$ or $\frac{3}{4}$ signs to avoid a simple transposition error resulting in an incorrect answer. Write it out.
14. The point value for each question is indicated in parentheses after the question. The amount of blank space on an examination question page is NOT an indication of the depth of answer required.
15. Show all calculations, methods, or assumptions used to obtain an answer.
16. Partial credit may be given. Therefore, ANSWER ALL PARTS OF THE QUESTION AND DO NOT LEAVE ANY ANSWER BLANK. Note: Partial credit will NOT be given on multiple choice questions.
17. Proportional grading will be applied. Any additional wrong information that is provided may count against you. For example, if a question is worth one point and asks for four responses, each of which is worth 0.25 points, and you give five responses, each of your responses will be worth 0.20 points. If one of your five responses is incorrect, 0.20 will be deducted and your total credit for that question will be 0.80 instead of 1.00 even though you got the four correct answers.
18. If the intent of a question is unclear, ask questions of the examiner only.
19. When turning in your examination, assemble the completed examination with examination questions, examination aids and answer sheets. In addition, turn in all scrap paper.
20. To pass the examination, you must achieve an overall grade of 80% or greater and at least 70% in each category.
21. There is a time limit of (6) hours for completion of the examination. (or some other time if less than the full examination is taken).
22. When you are done and have turned in your examination, leave the examination area (DEFINE THE AREA). If you are found in this area while the examination is still in progress, your license may be denied or revoked.
23. Ensure that all information you wish to have evaluated as part of your answer is on your answer sheet. Scrap paper will be disposed of without review immediately following the examination.

Enclosure 4

REQUIREMENTS FOR FACILITY REVIEW OF WRITTEN EXAMINATIONS

1. At the option of the Chief Examiner, the facility may review the written examination up to two weeks prior to its administration. This review may take place at the facility or in the Regional office. The Chief Examiner will coordinate the details of the review with the facility. An NRC examiner will always be present during the review.

Whenever this option of examination review is utilized, the facility reviewers will sign the following statement prior to being allowed access to the examination. The examination or written notes will not be retained by the facility.

a. Pre-Examination Security Agreement

I _____ agree that I will not knowingly divulge any information concerning the replacement (or initial) examination scheduled for _____ to any unauthorized persons. I understand that I am not to participate in any instruction involving those reactor operator or senior reactor operator applicants scheduled to be administered the above replacement (or initial) examination from now until after the examination has been administered. I understand that violation of this security agreement could result in the examination being voided.

Signature/Date _____

In addition, the facility staff reviewers will sign the following statement after the written examination has been administered.

b. Post-Examination Security Agreement

I _____ did not, to the best of knowledge, divulge any information concerning the written examination administered on _____ to any unauthorized persons. I did not participate in providing any instruction to those reactor operator and senior reactor operator applicants who were administered the examination from the time that I was allowed access to the examination.

Signature/Date _____

Enclosure 4 (Continued)

2. Regardless of whether the above examination review option is exercised, immediately following the administration of the written examination, the facility staff shall be provided a marked up copy of the examination and the answer key. The copy of the written examination shall include pen and ink changes made to questions during the examination administration.

If the facility did not review the examination prior to its administration, they will have five (5) working days from the day of the written examination to submit formal comments. If the facility reviewed the examination prior to its administration, any additional comments must be given to an examiner prior to his/her leaving the site at the end of the week of the written examination administration. In either case, the comments will be addressed to the responsible Regional Office by the highest on site 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 the required time frame 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 in grading the examinations 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/recommendation
 - c. Reference (to support facility comment)

- NOTES:
1. No change to the examination will be made without submittal of a reference to support the facility comment. Any supporting documentation that was not previously supplied, should be provided.
 2. Comments made without a concise facility recommendation will not be addressed.
4. A two hour post examination review may be held at the discretion of the Chief Examiner. If this review is held, the facility staff should be informed that only written comments that are properly supported will be considered in the grading of the examination.

cc w/enclosures (1), (2), (3) and (4):
 R. Cross, RV (2 copies)
 M. Pollack, Reed College
 L. Ruby, Reed College

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 J. Martin, RV
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 D. Kirsch, RV
 L. Miller, RV
 H. Berkow, HQ FBSS
 M. Cillis, RV
 T. Meadows, RV
 H. North, RV
 S. Weiss, NRR/PDNP

RV/jk

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MEADOWS
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LMILLER
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KIRSCH
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