

December 11, 1987

Tennessee Valley Authority  
ATTN: Mr. S. A. White  
Manager of Nuclear Power  
EN 38A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

Gentlemen:

SUBJECT: REQUALIFICATION PROGRAM EVALUATION - BROWNS FERRY NUCLEAR PLANT

In a telephone conversation between Mr. W. Dawson, Licensed Operator Training, and Mr. K. E. Brockman, NRC Region II Operator Licensing Section, arrangements were made for an evaluation of the operator licensing accelerated requalification program at the Browns Ferry Nuclear Plant.

The written and operating requalification examinations are scheduled for the week of March 14-18, 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 Requalification Program Evaluation," by January 8, 1988. Mr. Dawson has been advised of our selected reference material requirements, the number of sets that are required, and the examiners' names and addresses where each set is to be mailed.

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 management is responsible for providing adequate space and facilities in order to properly conduct the written examinations. Enclosure 2, "Requirements for Administration of Written Examinations," describes our requirements for conducting these examinations. Mr. Dawson 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.

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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. Dawson has been informed of these requirements.

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

Sincerely,

(ORIGINAL SIGNED BY K. P. Barr)

Kenneth P. Barr  
Acting Assistant Director  
for Inspection Programs  
TVA Projects Division  
Office of Special Projects

Enclosures:

1. Reference Material Requirements
2. Requirements for Administration of  
Written Examinations and NRC  
Rules and Guidelines
3. Requirements for Facility Review  
of Written Examination

cc w/encls:

R. G. Jones, Training Supervisor  
J. G. Walker, Plant Manager

bcc w/encls:

G. Gears, Project Manager, OSP  
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D. C. Payne, OL Examiner  
Senior Resident Inspector  
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State of Alabama

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## ENCLOSURE 1

### REFERENCE MATERIAL REQUIREMENTS FOR REACTOR/SENIOR REACTOR OPERATOR REQUALIFICATION PROGRAM EVALUATION

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. Copies of facility RO and SRO requalification examinations administered during the past two years.
16. The following on the plant reference simulation facility
  - 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.g., drifting shut of a main feed water control valve)
  - e. An identification 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 reference plant's control room
  - h. Copies of facility generated scenarios that expose the 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 instructors manual (voluntary by licensee)
  - j. Description of the scenarios used for the training class (voluntary by licensee)
17. All material different from that listed in items 1-16 that is specific to the Operator Requalification Training Program
18. 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.