

A. PURPOSE

This standard provides instructions for facility licensees and applicants to prepare and the NRC to review initial licensing applications. It also discusses the experience, training, education, and certification requirements and guidelines that an applicant should satisfy before being allowed to take an NRC reactor operator (RO), senior reactor operator (SRO), or limited senior reactor operator (LSRO) licensing examination.

B. BACKGROUND

The Commission-approved licensed operator training programs at most power reactor facilities are based on a systems approach to training (SAT) and use simulation facilities that have been either certified by the facility licensee or determined to be acceptable by the Commission under 10 CFR 55.45(b). In accordance with 10 CFR 55.31(a)(4), these facilities are *not* required to include details of the applicant's qualifications, experience, and training on the NRC license application form. In lieu of these details, the Commission will generally accept certification by an authorized representative of the facility licensee that the applicant has successfully completed the facility's Commission-approved training program.

If the facility licensee does not have a SAT-based licensed operator training program that uses a simulation facility acceptable to the Commission, the NRC will not accept the license application unless it includes the details of the applicant's qualifications and training. Detailed license eligibility requirements and guidelines are derived from 10 CFR Part 55, Subpart D, "Applications," and Regulatory Guide (RG) 1.8, Revision 2, "Qualification and Training of Personnel for Nuclear Power Plants," respectively. With respect to license applicants, RG 1.8 endorses, with exceptions, the guidance in American National Standards Institute/ American Nuclear Society (ANSI/ANS)-3.1-1981, "Selection, Qualification and Training of Personnel for Nuclear Power Plants." NRC examiners should refer to those documents as necessary when evaluating the eligibility of applicants at facilities that do not use an NRC-approved or facility-certified simulator as part of a SAT-based licensed operator training program.

C. RESPONSIBILITIES

The regulatory requirements associated with the license application process are detailed in Subpart D, "Applications," of 10 CFR Part 55. The medical requirements for license applicants and licensed operators appear in Subpart C, "Medical Requirements," of 10 CFR Part 55. These requirements should be referred to as necessary when preparing and reviewing license applications.

1. Applicant/Facility Licensee

- a. To apply for an RO or SRO license, an applicant must submit an NRC Form 398, "Personal Qualifications Statement - Licensee," and an NRC Form 396, "Certification of Medical Examination by Facility Licensee." (Computer-generated duplicates are acceptable.) The application is not complete until both

forms are filled out, signed by the appropriate personnel, and received by the NRC. Detailed instructions for completing NRC Form 398 are provided with the form. Additional instructions regarding waivers of training, experience, and examination requirements are provided in ES-204.

If the applicant is reapplying after a license denial, 10 CFR 55.35 applies, and the applicant must complete and submit a new Form 398. The applicant may file the second application two months after the date of the first final denial, a third application six months after the date of the second final denial, and successive applications two years after the date of each subsequent denial. Each new Form 398 shall describe the extent of the applicant's additional training since the denial and shall include a certification by the facility licensee that the applicant is ready for reexamination.

If the applicant previously passed either the written examination or the operating test, he or she may request a waiver of that portion of the licensing examination. Such waivers are limited to the first reapplication and must be requested within one year of the date of the failed examination. Refer to ES-204 for a more detailed discussion of this and other waiver criteria.

The medical data in support of NRC Form 396 are normally good for six months from the date of the medical examination. If more than 6 months have passed since the date of an RO or SRO instant applicant's medical examination, the facility licensee shall certify in writing that the applicant has not developed any physical or mental condition that would be reportable under 10 CFR 55.25. If the time since any applicant's last medical examination is expected to exceed 24 months before the licensing action is completed, the applicant shall be reexamined by a physician and the facility licensee shall recertify the applicant's medical fitness on NRC Form 396 before the NRC regional office issues the license.

If an applicant is reapplying after withdrawing a previous application or accepting a final license denial, he or she may request a waiver of a medical reexamination by checking Item 4.f.4 on NRC Form 398. The time since the last medical examination can not exceed 24 months and the applicant must certify in Item 17, "Comments," of the form that he or she has not developed any physical or mental condition that would be reportable under 10 CFR 55.25.

- b. Each applicant (except those applying for an LSRO license) must satisfactorily complete the NRC's generic fundamentals examination (GFE) section of the written operator licensing examination for the applicable vendor. Refer to ES-205 for more information on the GFE program.

Applicants do not need to take the GFE if they were previously issued an RO or SRO license or an instructor certificate based on a site-specific written examination (on the same type of facility) that was administered between February 1982 and November 1989 and included the material covered by the

GFE. Enter the date of the examination in Item 4.g on NRC Form 398 and an explanation in Item 17; a waiver is not required.

- c. As noted in ES-201, the facility licensee should submit preliminary, uncertified license applications and medical certifications for review by the NRC regional office at least 30 days before the examination date. This will permit the NRC to make preliminary eligibility determinations, process the medical certifications, evaluate any waivers that might be appropriate, and obtain additional information, if necessary, while allowing the facility licensee to finish training the applicants before the certified applications are due.
- d. The facility licensee's senior management representative on site must certify when an applicant has completed all of the facility licensee's requirements for the desired license level (i.e., experience, control manipulations, training, and medical). Such certification involves placing a check in Item 19.b of NRC Form 398, signing the form, and submitting it to the NRC regional office at least 14 days before the examination date.

The facility must also submit a written request that the written examination and operating test be administered to the applicant.

- e. When the NRC regional office denies a license application, the applicant may not accept the proposed denial. In such instances, the applicant may request that the Director, Division of Inspection Program Management (DIPM), Office of Nuclear Reactor Regulation (NRR), review the application denial or request a hearing in accordance with 10 CFR 2.103(b)(2). Further action will be taken in accordance with ES-502.
- f. The facility licensee is expected to inform the NRC regional office in writing if it desires to withdraw an application before the licensing process is complete.

2. NRC Regional Office

- a. The NRC regional office shall review the preliminary applications as soon as possible after they are received. In that way, the regional office can process the medical certifications, evaluate and resolve any waiver requests in accordance with ES-204, and obtain from the facility licensee any additional information that might be necessary in order to support the final eligibility determinations.

With regard to the medical certifications, the regional office shall forward the applicant's NRC Form 396 and the supporting medical evidence to the NRC physician at the Headquarters Health Unit or the regional contract physician for evaluation any time the examining physician has recommended that the applicant be issued a restricted license or that an existing restriction be changed (by checking block A.4 or A.5 on Form 396).

The NRC will not process a retake application if the applicant's request for reconsideration or a hearing on the previous license denial is still outstanding (refer to ES-502).

Before entering the applicants' data in the operator licensing tracking system (OLTS), the region shall verify that none of the applicants' names appear on the "Restricted Individuals List" found on the NRC's web site at <http://www.internal.nrc.gov/OE/restrict.htm>. The region shall check with the appropriate contact in the Office of Enforcement by telephone or electronic mail to verify that the information on the subject individual is current before using the information on the list to deny a licensing action.

- b. The regional office will verify that the applicant has successfully passed the GFE, if required, and review the data on NRC Form 398 to ensure that it is complete.

Affirmative responses to Items 12.a and 12.b of NRC Form 398, indicate that the applicant has successfully completed a Commission-approved, SAT-based training program that uses a simulation facility acceptable to the Commission under 10 CFR 55.45(b). If the facility licensee checks "yes" in response to these items, the licensee need not complete Items 13, "Training," 14, "Experience," and 15, "Experience Details," of NRC Form 398. The region may accept the application without further review unless there is reason to request further information concerning the applicant's qualifications.

Occasionally, a facility licensee completes Items 13, 14, and 15 even though they are not required as explained above. In such instances, the region may review the information provided against the eligibility guidelines in Section D for the requested license level and resolve any deviations with the facility licensee.

New applications must include the number of significant control manipulations in Item 13.3; at least five are required on the facility for which the license is sought. Every effort should be made to diversify the reactivity and power changes for each applicant. Startups, shutdowns, large load changes, and changes in rod programming are some examples; these changes could be accomplished manually using such systems as rod control, chemical shim control, and recirculation flow control. This requirement can only be waived or deferred under the conditions specified in 10 CFR 55.31(a)(5); situations other than those specified would require an exemption in accordance with 10 CFR 55.11. (Refer to the note following Section D.1.b(5) below for additional information regarding exemptions from this requirement.) For ROs applying for an SRO license, certification that the operator has successfully operated the controls of the facility as a licensed operator shall be accepted as evidence of having completed the required manipulations.

If an applicant checks "no" in response to Items 12.a and 12.b on Form 398, the region shall review the application against the specific RO, SRO, or LSRO eligibility guidelines described in Section D.

If the applicant is reapplying after a previous examination failure and license denial, the region shall evaluate the applicant's additional training to determine if the facility licensee made a reasonable effort to remediate the deficiencies that caused the applicant to fail the previous examination.

- c. The region may determine that the preliminary application is incomplete, that more information is necessary to make a waiver determination, or that the applicant does not meet the requirements in 10 CFR 55.31. In such instances, the region will note the deficiencies and request that the facility licensee supply additional information when it submits the final, certified license application (or sooner if possible).

Conversely, the region may determine that the preliminary application is complete, and the applicant meets the eligibility requirements or is expected to meet the requirements pending the receipt of additional information. In such instances, the region shall enter the applicant's name, docket number, and examination requirements on the examination assignment sheet in accordance with ES-201.

- d. Upon receiving the final, certified license application, the reviewer shall evaluate any new information to ensure that the eligibility criteria are satisfied. If so, the reviewer shall check the "meets requirements" block at the bottom of Form 398, sign and date the form. If necessary, the reviewer shall add the applicant's name and other data to the examination assignment sheet in accordance with ES-201. The reviewer shall also ensure that the assignment sheet accurately reflects any examination waivers that may have been granted in accordance with ES-204.

If the region determines that the applicant still does not meet the eligibility requirements, the regional licensing authority will discuss its decision with the NRR operator licensing program office and notify the applicant in writing that the application is being denied and identify the deficiencies on which the denial is based (Attachment 1). The responsible regional supervisor, or designee, shall check the "does not meet requirements" block at the bottom of Form 398, and shall sign and date the form. The applicant's name shall be stricken from the examination assignment sheet; the applicant shall not be permitted to take the licensing examination until the region determines that he or she meets the eligibility criteria.

With prior approval from NRR, as necessary, in accordance with ES-204, the region may administer a license examination to an applicant who has not satisfied the applicable training or experience requirements at the time of the examination, but is expected to complete them shortly thereafter. Assuming that the applicant passes the examination, the region shall not issue the applicant's license until the facility licensee certifies that all of the requirements have been completed. (Refer to ES-501 for additional guidance.)

D. LICENSE ELIGIBILITY GUIDELINES

Revision 2 of Regulatory Guide (RG) 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to the training and qualifications of nuclear power plant personnel. For the positions of shift supervisor, senior operator, and licensed operator, this RG generally endorses the guidelines contained in ANSI/ANS-3.1-1981; specific clarifications, additions, and exceptions are noted in Section C, "Regulatory Position," of RG 1.8. The license eligibility guidelines in RG 1.8, Revision 2, and ANSI/ANS-3.1-1981 are summarized below.

Except as specifically noted below, experience and training are separate aspects of license eligibility. As stated in NUREG-1262 (in response to Question No. 113), a person should meet the experience guidelines before entering the license training program. Time spent in training before entering the license training program may qualify as experience, but time spent in an NRC-approved training program leading up to license eligibility should normally not be double-counted as experience.

The NRC regional office should refer all questions regarding license eligibility to the NRR operator licensing program office for resolution.

1. Reactor Operator

a. Experience

- (1) The applicant should have a minimum of three years of power plant experience, at least one of which is spent at the nuclear power plant for which the license is sought (preferably in the performance of nonlicensed operator duties).
- (2) The applicant should spend at least six months performing plant operational duties as a nonlicensed operator at the nuclear power plant for which the license is sought.

b. Training

- (1) The applicant should complete at least 13 weeks as an extra person on shift in training for the RO position. This training should include all phases of day-to-day operations and be conducted under the supervision of licensed personnel.
- (2) The applicant should be trained in nuclear power plant fundamentals and plant systems, use of those systems to control or mitigate an accident during which the core is severely damaged, and operating practice.
- (3) The applicant should complete at least 500 hours of lectures on the principles of reactor operation, design features and general operating characteristics of the nuclear power plant involved, instrumentation and

control (IC) systems, safety and emergency systems, standard and emergency operating procedures, and radiation control and safety procedures.

- (4) The applicant should satisfactorily complete an NRC-approved training program involving at least one week at a nuclear power plant simulator. The simulator training center should certify the applicant's ability during a reactor startup to manipulate the controls, keep the reactor under control, predict instrument responses, use instrumentation, follow procedures, and explain annunciator alarms that occur during operation.
- (5) The applicant must manipulate the controls of the reactor during five significant changes in reactivity or power level (refer to 10 CFR 55.31(a)(5)). Every effort should be made to diversify the reactivity and power changes for each applicant. Startups, shutdowns, large load changes, and changes in rod programming are some examples; these changes could be accomplished manually using such systems as rod control, chemical shim control, and recirculation flow control.

[Note: The NRC is preparing a proposed regulatory amendment that, if approved by the Commission, will allow applicants to complete the required reactivity manipulations on a plant-referenced simulator. While this rulemaking is in progress, the staff is prepared to consider requests for exemption from the requirements of §55.31(a)(5) so that a simulation facility may be considered acceptable for completing the requirement on a case-by-case basis. As part of any exemption request, the facility licensee shall provide evidence that the reactivity manipulations are conducted under defined scenario conditions and that simulator fidelity is assured by adequate software controls and is confirmed before the training session. The staff will consider a commitment or certification of a simulation facility in accordance with ANSI/ANS 3.5-1998 to be sufficient evidence of simulator fidelity to fulfill the experience requirement of §55.31(a)(5) without a need to submit additional information regarding simulator software.]

c. Education

The applicant should have a high school diploma or equivalent.

2. Senior Reactor Operator

a. Experience

- (1) The applicant should have a minimum of four years of responsible power plant experience, as defined in RG 1.8. At least two of those four years should be nuclear power plant experience, and at least six months of the nuclear power plant experience should be at the plant for which the

applicant seeks a license.

- (2) The applicant should have actively performed licensed RO duties for at least one year at the facility for which the SRO license is sought. The NRC may accept any one or more of the following education or experience qualifications to satisfy this requirement provided that the applicant supplies sufficient details in the license application for the staff to make a judgement regarding equivalence:
- A four-year degree in engineering or the equivalent (e.g., a degree in engineering technology or the physical sciences that includes course work in physics, mathematics, or engineering; a professional engineer's (PE) license obtained by passing the PE examination).
 - At least one year as an active licensed RO at a comparable facility (same vendor, similar vintage) or 18 months as an RO at a noncomparable commercial power reactor.
 - At least two years in a position equivalent to a licensed RO at a military reactor.
 - Experience obtained in licensed positions (or their equivalent) on other large-scale reactors will be evaluated on a case-by-case basis. Applicants must also submit a waiver request in accordance with ES-204 if they want this experience to apply toward the requirement.
- (3) During the two years of nuclear power plant experience, the applicant should participate in reactor operator activities at power levels greater than 20 percent for at least six weeks.

b. Training

- (1) The applicant should complete at least 13 weeks as an extra person on shift in training for the SRO position. This training should include all phases of day-to-day operations and be conducted under the supervision of licensed personnel. Any portion of the 13 weeks that is spent at or above 20 percent power may also be used to satisfy the experience guideline in Section D.2.a(4~~3~~).
- (2) If the applicant has not held an RO license at the facility and one of the qualifications specified in Section D.2.a(2) is substituted for that experience, the training guidelines of Sections D.1.b(4) and D.1.b(5) should be met. The applicant should satisfactorily complete a training program that is comprehensive in its coverage of both RO and SRO knowledge, skills, and abilities and must take an SRO-instant license

examination.

- (3) The applicant should be trained in nuclear power plant fundamentals and plant systems, use of those systems to control or mitigate an accident during which the core is severely damaged, and operating practice.
- (4) The applicant should also complete the additional instruction specified in Section 5.2.1.6 of ANSI/ANS-3.1-1981 in subjects related to the duties of an SRO.

c. Education

The applicant should have a high school diploma or equivalent.

3. Limited Senior Reactor Operator

a. Experience

The applicant should have three years of nuclear power experience that includes active participation in at least one refueling outage at the site for which the license is sought or at a similar facility. Six months of the nuclear power plant experience must be at the site for which the LSRO license is sought or at a similar facility owned by the same facility licensee.

b. Training

The applicant is expected to have satisfactorily completed a training program that ensures that he or she is qualified to supervise fuel handling operations. The program should be based on a systems approach to training and is expected to include instruction in at least the following areas:

- (1) nuclear power plant and health physics fundamentals and the principles of reactor theory and thermodynamics
- (2) design features of the nuclear power plant pertaining to fuel handling activities, including plant systems and equipment associated with fuel handling operations, pertinent IC systems, and features of the emergency core cooling systems (ECCSs) associated with the refueling mode of operation
- (3) the use of installed plant systems to control or mitigate an accident in which the core is damaged during refueling operations
- (4) operating practices and procedures that pertain to refueling, including administrative, operational, surveillance, emergency, radiation control, and safety procedures; the technical specifications applicable to refueling; and the requirements concerning communications and

interfaces with the main control room

The applicant should also complete a minimum of 80 hours of on-the-job training (OJT) in refueling activities, including manipulation of the refueling bridge or similar refueling equipment.

c. Education

The applicant should have a high school diploma or equivalent.

4. Cold License Eligibility

Cold examinations are those administered before the unit completes preoperational testing and the initial startup test program as described in the FSAR.

- a. Each applicant must satisfactorily complete the training programs described in Section 13.2 of the FSAR and approved by the NRC. The NRC's review and approval are based on information contained in Section 13.2.1 of the Standard Review Plan (SRP) (NUREG-0800).

Note: These NRC-approved training programs typically require ten startups on a research reactor. This requirement may be waived if the applicant has completed a plant-referenced simulator training program accredited by the Institute of Nuclear Power Operations (INPO).

- b. In lieu of the control manipulations on the facility for which the license is sought (per 10 CFR 55.31(a)(5)), the Commission may accept evidence of satisfactory performance of simulated control manipulations as part of a Commission-approved training program on a simulation facility acceptable to the Commission under 10 CFR 55.45(b).

E. ATTACHMENTS/FORMS

Attachment 1, "Sample Initial Application Denial from Region"

NRC Letterhead

(date)

(Applicant's name)
(Street address)
(City, State, Zip code)

Dear (Name):

This is to inform you that your application of (date) for a (reactor operator, senior reactor operator) license submitted in connection with the (facility name) is hereby denied.

(Region to discuss deficiencies and which part of 10 CFR 55.31, ES-202, NRC- approved facility training program, or Regulatory Guide 1.8 was involved.) When you have met the requirements of 10 CFR 55.31, you may submit another application.

If you do not accept this denial, you may, within 20 days of the date of this letter, take one of the following actions:

- You may request that the NRC reconsider the denial of your application by writing to the Director, Division of Inspection Program Management, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Your request must include specific reasons for your belief that your application was improperly denied. If the NRC determines that the denial of your application remains appropriate, you still have the right to request a hearing pursuant to 10 CFR 2.103(b)(2), as described below.
- You may request a hearing in accordance with 10 CFR 2.103(b)(2). Submit your request, in writing, to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, with a copy to the Associate General Counsel for Hearings, Enforcement, and Administration, Office of the General Counsel, at the same address.

If you have any questions, please contact (name) at (telephone number).

Sincerely,

(Regional branch chief or above)

Docket No. 55-(number)cc: (Facility representative who signed the applicant's NRC Form 398)

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

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