

Operator Licensing Examiner Standards for Research and Test Reactors

Second Draft Report for Comment

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Operator Licensing Examiner Standards for Research and Test Reactors

Second Draft Report for Comment

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COMMENTS ON DRAFT REPORT

Any interested party may submit comments on this report for consideration by the U.S. Nuclear Regulatory Commission (NRC) staff. Comments may be accompanied by additional relevant information or supporting data. Please specify the report number **NUREG-1478, Revision 3, second draft for comment** in your comments and send them by the end of the comment period specified in the *Federal Register* notice announcing the availability of this draft report.

Addresses: You may submit comments in electronic form. Please include Docket ID **NRC-2025-1138** in the subject line of your comments. Comments submitted electronically will be posted on the NRC website and on the Federal rulemaking website <http://www.regulations.gov>.

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For any questions about the material in this report, please contact: Theresa Buchanan, Senior Reactor Engineer (Examiner Qualified), at 301-415-2789 or by e-mail at Theresa.Buchanan@nrc.gov.

Please be aware that any comments that you submit to the NRC will be considered a public record and entered in the Agencywide Documents Access and Management System (ADAMS). Do not provide information you would not want to be publicly available.

ABSTRACT

The U.S. Nuclear Regulatory Commission (NRC) publishes NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors," to establish the procedures and practices for administration of operator licensing examinations for reactor operator and senior reactor operator licenses at non-power reactor facilities in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 55, "Operators' Licenses."

The NRC intends these examiner standards (ESs) to ensure the consistent administration of examinations for all applicants and licensed operators at non-power reactor facilities. As stated in 10 CFR 55.40, "Implementation," paragraph (a), "[t]he Commission shall use the criteria in ... NUREG-1478 ... in effect six months before the examination date ... to prepare the written examinations required by [10 CFR] 55.41 and 55.43 and the operating tests required by [10 CFR] 55.45. The Commission shall also use the criteria in ... NUREG-1478 ... to evaluate the written examinations and operating tests prepared by facility licensees pursuant to paragraph (b) of this section."

The NRC is issuing Revision 3 of NUREG-1478 to (1) introduce electronic systems and technology, (2) include changes to the 10 CFR Part 55 regulations since Revision 2, (3) correct grading criteria for accuracy, and (4) reorganize the ESs into topic-based sections for ease of use.

PAPERWORK REDUCTION ACT STATEMENT

This NUREG provides voluntary guidance for implementing the mandatory information collections in 10 CFR Part 55, NRC Form 396, and NRC Form 398 that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved by the Office of Management and Budget (OMB), under control numbers 3150-0018, 3150-0024, and 3150-0090 respectively. Send comments regarding this information collection to Infocollects.Resource@nrc.gov and to the OMB reviewer at: OMB Office of Information and Regulatory Affairs (3150-0011 and 3150-0151), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street, NW, Washington, DC, 20503.

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SUMMARY OF SIGNIFICANT CHANGES FROM NUREG-1478, REVISION 2

Note: Removed all "This Page Intentionally Left Blank" notations.

Across multiple examiner standards (ESs):

- Deleted specific reference to item block numbers and letters on NRC Form 398 and NRC Form 396 so that the forms can be revised independently of NUREG-1478.
- Removed reference to program director.
- Replaced the phrase "request reconsideration of a denial" with "request NRC staff review of a denial."
- Changed references to ANSI/ANS-15.4 to allow the use of multiple revisions of the standard.
- Minor corrections, clarifications, and improvements to existing language.

ES 1.2 Added "Veteran Skills to Jobs Act" to the list of statutes.

ES 2.1 D. Moved paragraph from F. to D. regarding possible preexamination site visits.

E. Moved two paragraphs regarding applicants requesting excusals or waivers to ES 2.2.

E. Moved paragraphs regarding 10 CFR 55.35, "Re-applications," to ES 2.2.

Changed the title of "Corporate Notification Letter" to "Sample Examination Confirmation Letter."

In the "Sample Examination Confirmation Letter":

- Updated the information on the NRC Form 398 and NRC Form 396 website location and also updated the Office of Management and Budget clearance information.

Added detail to the instructions in enclosures 1 through 4.

Added wording encouraging facility licensee preliminary review of the written examination.

ES 2.2 B. Added guidance for the NRC chief examiner's (CE's) review of applications.

B.2. Added paragraphs regarding 10 CFR 55.35 moved from ES 2.1.

Deleted the reference to submitting preliminary license applications 30 days before the examination start date.

1		C. Further clarified the review of NRC Form 396 to check for the actual guidance
2		used during the medical examination.
3		
4		Removed Section G, "Maintaining Medical Standards for Licensees."
5		
6	ES 2.3	Added editorial changes.
7		
8		Revised the paragraph on how long medical data in NRC Form 396 are
9		acceptable.
10		
11	ES 2.4	Deleted Attachment 2, "Sample Renewal Application Denial Letter."
12		
13	ES 3.1	In Section G, "Requirements," added a statement reminding CEs that
14		documentation includes the safety significance of the weakness.
15		
16		On Form ES-3.1-1, added a line for branch chief to sign <i>Issue/Deny License</i> .
17		
18		Retitled Attachment 1 as "Systems for Operating Tests."
19		
20		Changed Attachment 2 to remove non-power reactors no longer operating.
21		
22		Added Attachment 3, "Example Areas of Discussion for Category A:
23		Administrative Topics."
24		
25		Added Attachment 4, "Example Areas of Discussion for Category B: Facility
26		Walkthrough."
27		
28	ES 3.2	Added statement in D.2.a: "The CE must ensure that sufficient material is
29		covered during the administration of each topic to make a licensing
30		determination."
31		
32		In D.4, "Integrated Facility Operations," added the statement that after
33		manipulations have been completed, reactor may be turned over to staff or shut
34		down.
35		
36		Added reminder to use ES 3.1, Attachment 3.
37		
38		Added reminder to use ES 3.1, Attachment 4.
39		
40	ES 3.3	In Section C.4, "Operating Test Comments (Form ES-3.1-1, page 6)," added
41		more instructions.
42		
43		In Section C.5, "Cover/Summary Page," added information about peer review.
44		
45	ES 4.1	In Section E, "NRC Quality Assurance Reviews," made minor clarifications.
46		
47	ES 4.2	No significant changes.
48		
49	ES 4.3	No significant changes.

1	ES 5.1	Made minor changes to the instructions for examination review. Changed
2		“licensing official” to “branch chief” throughout.
3		
4	ES 5.2	Changed the instructions for applicant demand for a hearing.
5		
6	ES 6.1	Added to the purpose of this standard its applicability to facilities where all
7		licensed operators have lost proficiency.
8		
9		Added the sentence: “A regularly scheduled biennial written examination may be
10		substituted for the written examination if it meets this standard.”
11		
12		Clarified instructions for requalification program evaluation.
13		
14		In Enclosure 1 to Attachment 1, clarified instructions regarding reference material
15		requirements.
16		
17		In Enclosure 2 to Attachment 1, added: “The CE will provide reference material
18		as needed for the examination.”
19		
20		In Enclosure 3 to Attachment 1, clarified the rules and guidance for CEs.
21		
22	ES 6.2	No significant changes.
23		
24	ES 7.1	Added application of this standard to facilities shutdown for extended periods
25		(with fuel to be removed from the facility).
26		
27	ES 7.2	Changed forms to reflect current format and minor editorial and clarification
28		changes.
29		
30		Revised instructions for written examination content and preparation.
31		
32		Added to instructions for administration of examinations regarding the grade
33		necessary to pass the written examination.
34		
35	ES 7.3	No significant changes.
36		
37	ES 7.4	No significant changes.
38		
39		Added “Glossary” to incorporate definitions of terms used across all standards.

ABBREVIATIONS AND ACRONYMS

1		
2	ADAMS	Agencywide Documents Access and Management System
3	AEA	Atomic Energy Act of 1954, as amended
4	ANSI/ANS	American National Standards Institute/American Nuclear Society
5		
6	BC	branch chief
7		
8	CE	chief examiner
9	CFR	<i>Code of Federal Regulations</i>
10		
11	EPIP	emergency plan implementing procedure
12	ES	examiner standard
13		
14	GED	General Educational Development test
15		
16	ID	identification
17		
18	K/A	knowledge and ability
19		
20	LSRO	senior reactor operator limited to fuel handling
21		
22	NPUF	non-power production and utilization facility
23		
24	NPUFOL	NPUF operator licensing
25		
26	NRC	U.S. Nuclear Regulatory Commission
27		
28	OLA	operator licensing assistant responsible for non-power production and utilization
29		facility operator licensing docket files
30		
31	PDF	portable document format
32		
33	RO	reactor operator
34		
35	SRO	senior reactor operator
36	SRO-I	senior reactor operator—instant
37	SRO-U	senior reactor operator—upgrade

1.0 GENERAL

1.1 PURPOSE AND FORMAT OF NUREG-1478

A. Purpose

The purpose of this NUREG is to provide guidance to the NRC staff and facility licensees to ensure the consistent administration of examinations for all applicants and licensed operators at non-power production and utilization facilities (NPUFs).

B. Format

Each examiner standards (ES) in this NUREG explains procedures and practices for the NPUF Operator Licensing (NPUFOL) Program. For ease of reference, each ES is assigned a two-digit number, and related ESs are grouped together such that ESs beginning with the same digit apply to related aspects of the NPUFOL program, as follows:

ES 1.X	General
ES 2.X	Preexamination activities
ES 3.X	Operating tests
ES 4.X	Written examinations
ES 5.X	Postexamination activities
ES 6.X	Requalification examinations
ES 7.X	Senior reactor operator limited to fuel handling (LSRO) licenses

1.2 APPLICABLE REGULATIONS AND PUBLICATIONS

A. Purpose

This standard lists the U.S. statutes and the U.S. Nuclear Regulatory Commission (NRC) regulations that establish the requirements for the conduct of NPUFOL examinations. It also identifies the regulatory guides, NUREG reports, and other published guidance intended to implement the regulations, and the American National Standards Institute (ANSI)/American Nuclear Society (ANS) documents that may provide additional guidance.

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 55, "Operators' Licenses," requires that applicants for reactor operator (RO) and senior reactor operator (SRO) licenses pass both a written examination and an operating test (both initially and for requalification). Moreover, the regulations mandate that the license examinations must be developed and administered in accordance with 10 CFR 55.41, "Written examination: Operators," and 10 CFR 55.45, "Operating tests," for ROs or 10 CFR 55.43, "Written examination: Senior operators," and 10 CFR 55.45 for SROs. The regulation at 10 CFR 55.40(a) states the following:

The Commission shall use the criteria in ... NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors," ... to prepare the written examinations required by [10 CFR] 55.41 and 55.43 and the operating tests required by [10 CFR] 55.45. The Commission shall also use the criteria in ... NUREG-1478 ... to evaluate the written examinations and operating tests prepared by facility licensees pursuant to paragraph (b) of this section.

Pursuant to 10 CFR 55.40(b), facility licensees may prepare, proctor, and grade the written examinations required by 10 CFR 55.41 and 55.43 and may prepare, proctor, and grade the operating tests required by 10 CFR 55.45 as long as, among other things, they prepare, proctor, and grade the required examinations and tests in accordance with the criteria in NUREG-1478 or other criteria that has been reviewed and approved by the Commission.

B. Statutes

1. Atomic Energy Act of 1954

Section 107 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2137) (AEA), states the following:

The Commission shall:

- (a) Prescribe uniform conditions for licensing individuals as operators of any of the various classes of production and utilization facilities licensed in this Act;
- (b) Determine the qualifications of such individuals;
- (c) Issue licenses to such individuals in such form as the Commission may prescribe; and
- (d) Suspend such licenses for violations of any provision of this Act or any rule or regulation issued thereunder whenever the Commission deems

1 such action desirable.

2
3 Section 189a of the AEA (42 U.S.C. 2239(a)) provides that in any proceeding for the granting,
4 suspending, revoking, or amending of any license, including the licenses for operators and
5 senior operators of nuclear reactors, the NRC shall grant a hearing upon the request of any
6 person whose interest may be affected by the proceeding.
7

8 **2. Veteran Skills to Jobs Act**

9
10 The Veteran Skills to Jobs Act (Pub. L. 112-147, July 23, 2012, 126 Stat. 1138) provides that
11 each Federal licensing authority shall consider and may accept, in the case of any individual
12 applying for a license, any relevant training received by such individual while serving as a
13 member of the U.S. armed forces for the purpose of satisfying the requirements for the license.
14

15 **C. Regulations**

16 17 **1. 10 CFR Part 2, “Agency Rules of Practice and Procedure”**

18
19 Under 10 CFR 2.103(b), if the NRC finds that an application does not comply with the
20 requirements of the AEA and the Commission’s regulations, the agency may issue a notice of
21 denial of the application and inform the applicant in writing of the nature of any deficiencies or
22 the reason for the denial and the right of the applicant to demand a hearing within 20 days from
23 the date of the notice or such longer period as may be specified in the notice.
24

25 Under 10 CFR 2.107(a), the NRC may permit an applicant to withdraw an application before the
26 issuance of a notice of hearing on such terms and conditions as it may prescribe or may, on
27 receiving a request for withdrawal of an application, deny the application or dismiss it with
28 prejudice. If the application is withdrawn before the issuance of a notice of hearing, the NRC
29 shall dismiss the proceeding. Withdrawal of an application after the issuance of a notice of
30 hearing shall be on such terms as the presiding officer may prescribe.
31

32 **2. 10 CFR Part 9, “Public Records”**

33
34 Subpart A, “Freedom of Information Act Regulations,” implements the provisions of the Freedom
35 of Information Act (5 U.S.C. 552), concerning the availability of NRC records to the public for
36 inspection and copying.
37

38 Subpart B, “Privacy Act Regulations,” implements the provisions of the Privacy Act of 1974
39 (5 U.S.C. 552a), concerning disclosure and availability of certain NRC records maintained on
40 individuals.
41

42 Subpart C, “Government in the Sunshine Act Regulations,” implements the provisions of the
43 Government in the Sunshine Act (5 U.S.C. 552b), concerning the opening of Commission
44 meetings to public observation.
45

46 Subpart D, “Production or Disclosure in Response to Subpoenas or Demands of Courts or
47 Other Authorities,” describes procedures governing the production of NRC records, information,
48 or testimony in response to subpoenas or demands of courts or other judicial or quasi-judicial
49 authorities in State and Federal proceedings.

3. 10 CFR Part 20, “Standards for Protection against Radiation”

The regulations in 10 CFR Part 20 establish standards for protection against radiation hazards arising from NRC-licensed activities. Some material is appropriate for inclusion in the examinations administered to candidates for RO or SRO licenses.

4. 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities”

The regulations in 10 CFR Part 50 provide the facility licensing provisions and requirements. While this section is primarily associated with facility licensing, several sections apply to operator licensing, including the following.

As required by 10 CFR 50.34(b)(8), a facility’s final safety analysis report (FSAR) must include a description of the operator requalification program. This description forms the basis for the inspection, audit, and approval of requalification programs.

The regulations in 10 CFR 50.54(i-1) state that within three months after the issuance of an operating license, the facility licensee shall have in effect an operator requalification program, which must, as a minimum, meet the requirements of 10 CFR 55.59(c). Notwithstanding the provisions of 10 CFR 50.59, “Changes, tests, and experiments,” the facility licensee may not decrease the scope of its approved requalification program without authorization from the Commission.

The regulations in 10 CFR 50.54(k)–(m) restrict control manipulations to licensed operators and are conditions of all facility licenses issued under 10 CFR Part 50. For NPUFs, reference applicable general exemptions within 10 CFR 55.13, “General exemptions,” for detailed information on restricted manipulation of reactor or facility controls.

4. 10 CFR Part 55, “Operators’ Licenses”

The implementing regulation for licensing operators and senior operators (i.e., ROs and SROs) is in 10 CFR Part 55. This regulation establishes the requirements for operator licensing, conditions of operator licenses, and elements of requalification programs.

D. Regulatory Guides, NUREG Reports, and ANSI/ANS Standards

Regulatory guides, NUREG reports, and ANSI/ANS standards are not requirements except as specified in Commission orders or as committed to by the facility licensee. The appropriate revisions should be consulted as referenced in the facility final safety analysis report or approved training program. The following paragraphs summarize these documents.

NUREG-1537, “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors,” Part 2

Section 12.10, “Operator Training and Requalification,” describes the training and licensing of operators and identifies information to be supplied by applicants for facility licensing.

ANSI/ANS-15.4, “Selection and Training of Personnel for Research Reactors”

This standard provides criteria for the selection and training of research reactor operating personnel. It addresses their qualifications, training, initial licensing, requalification, and

1 relicensing. This standard is predicated on levels of responsibility rather than on a particular
2 organizational concept. Each facility licensee must comply, at a minimum, with the revision that
3 it has committed to in its licensing documentation.

4
5 **ANSI/ANS-3.4, “Medical Certification and Monitoring of Personnel Requiring Operator**
6 **Licenses for Nuclear Power Plants”**

7
8 This standard provides methods acceptable to the NRC staff for facility licensees to
9 demonstrate that, through meeting the criteria of the standard, an applicant or licensee at
10 utilization facilities, as defined in 10 CFR Part 50, will possess a degree of medical fitness
11 sufficient to meet the medical requirements of 10 CFR Part 55. The NRC has endorsed this
12 standard for power reactors in Regulatory Guide 1.134, “Medical Assessment of Licensed
13 Operators or Applicants for Operator Licenses at Nuclear Power Plants.”

2.0 PREEXAMINATION ACTIVITIES

2.1 PREEXAMINATION ACTIVITIES

A. Purpose

This standard describes the activities required to prepare for an operator licensing examination at an NPUF facility. It includes procedures for scheduling examinations, assigning examiner(s), obtaining facility-specific reference material, and reviewing operator license applications.

B. Examination Requests and Scheduling

Annually, the NPUFOL Program branch chief (BC) or designee will request from each facility licensee their planned operator licensing examination needs for the upcoming fiscal year (October – September). The NPUFOL Program examination schedule is based upon the responses to this request. If a facility licensee needs to modify a requested examination date, the BC should be notified immediately to reschedule the examination. Examination needs identified outside of this request period should be submitted to the BC for consideration in the examination schedule. Rescheduled or late examination requests will be considered on a case-by-case basis depending on the availability of resources.

C. Assignment of Examiners

The examination schedule will be used by the BC to develop the chief examiner (CE) assignments. Factors to be considered in assignment include examiner experience, facility complexity, type(s) of applicants being examined, examiner training needs, diversity of facility examiner assignments from previous examinations at the facility, and travel distances and costs. Depending on the number of applicants for a given facility examination, the CE may request that the BC assign help from another examiner to prepare or administer the examination. Each examiner's certification status, other examination commitments, general availability, and efficient uses of resources will be considered when making examiner assignments.

To maintain objectivity, an NRC examiner who was previously employed by a facility licensee (or by one of its contractors) may not be assigned any direct responsibilities for developing, administering, observing, or grading written examinations or operating tests at that licensee's facilities for **at least 2 years** after the examiner ended their employment. If a facility licensee examiner was significantly involved in training any of the current license applicants before being designated as a facility licensee examiner, the facility licensee shall not assign that individual any direct responsibilities for administering or grading written examinations or operating tests for that class of applicants. If an NRC or facility licensee examiner is assigned to an examination that might appear to present a conflict of interest, the examiner shall inform his or her immediate supervisor of the potential appearance of conflict.

If a facility examination assignment presents a conflict of interest or the appearance of a conflict of interest for the CE, that CE will discuss the matter with the BC. After reviewing the facts of the possible conflict of interest, the BC will make the appropriate assignment determination.

For facility-administered operating tests, the BC will assign resources to ensure observation of the full operating test.

D. Coordinating Examination Details

Following CE assignment, the CE will contact the facility licensee to confirm the details of the examination request. Considerations should include the training schedule, candidate(s) and facility staff availability, and reactor operations activities. The NRC will issue an examination confirmation letter (Attachment 1) normally 90 days before the agreed upon examination date. Normally, the CE will schedule the NRC's administration of both the written examination and operating tests during a single site visit.

Occasionally, the CE may need to coordinate a preexamination site visit with the facility licensee prior to the scheduled examination date to allow the NRC examiner(s) to become familiar with the facility. The BC will assess the need for a preparatory preexamination site visit. Factors to be considered may include the costs and benefits of the trip, experience of the assigned examiner(s), number of applicants, recent facility changes, and complexity of the operating tests to be administered.

E. Reviewing License Applications

The CE will review the applications according to ES 2.2 to decide whether the applicants meet the requirements specified in 10 CFR 55.31, "How to apply"; 10 CFR 55.33, "Disposition of an initial application"; and 10 CFR 55.35, "Re-applications," for initial license candidates.

F. Facility Licensee and NRC Preexamination Reviews

For NRC-prepared examinations, the CE will arrange with the facility licensee for appropriate facility licensee staff to review the written examination before it is administered. Enough time should be allowed to provide comments and the NRC examiner to make modifications, if necessary, without delaying the examination. Typically, the review will occur during the first day of the examination. The BC should be notified of any facility licensee comments that cannot be resolved before administration of the examination. In some cases, the CE may arrange for the appropriate facility licensee staff to receive and review the examination in advance (e.g., by mail or electronic means). The facility licensee staff receiving the written examination will control and conduct the review according to the guidelines and instructions contained in Attachment 1, Enclosure 4, "Facility Licensee Review of Written Examinations." The facility licensee may provide feedback before, during, and immediately following the written examination administration.

For facility-prepared examinations, the facility licensee must arrange with the CE sufficient time for the NRC's review and approval of the examination. Enough time should be allowed for the CE to provide comments and for the facility licensee to make modifications, if necessary, without delaying the examination. The facility licensee may administer the examination following written notification that the examination has been approved by the NRC.

G. Attachments/Forms

Attachment 1, "Sample Examination Confirmation Letter"

Attachment 2, "Sample Examination Assignment Sheet"

ATTACHMENT 1
SAMPLE EXAMINATION CONFIRMATION LETTER

[NRC Letterhead]

[Date]

[Facility Contact Name]

[Facility Contact Title]

[Street Address line 1]

[Street Address line 2]

[City, State, Zip Code]

SUBJECT: EXAMINATION CONFIRMATION LETTER, 50-[XXX]/OL-YY-XX, [FACILITY
NAME]

Dear []:

Arrangements were made with [INSERT NAME OF PERSON OR [you]] for the administration of operator licensing examinations at the [INSERT NAME OF FACILITY] reactor. The written examinations and operating tests are scheduled for the week of [INSERT DATE].

To meet this schedule, please furnish the material listed in Enclosure 1, "Reference Material for Reactor/Senior Reactor Operator Licensing Examinations," [INSERT [and the facility-prepared written examination] FOR FACILITY-PREPARED EXAMINATIONS ONLY] at least [60 / INSERT TIMEFRAME AGREED TO BY THE CE AND FACILITY LICENSEE FOR FACILITY-PREPARED EXAMINATIONS] days before the examination date to the following address:

ATTN: [INSERT NAME]
Mail Stop: [O6 A51]
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

The requested material may be submitted either electronically or in hard copy to the chief examiner. Although not required, electronic reference materials that are text-searchable, along with a master table of contents, are preferred.

When electronically submitting examination material to the NRC, access should be limited to prevent unauthorized disclosure of potential examination information. Sensitive, confidential, and/or security-related facility information should **ONLY** be submitted through secure and/or approved methods. File sharing tools or other facility accepted methods may vary and should be coordinated with the assigned chief examiner.

Enclosure 2, "Administration of Written Examinations," describes your responsibilities for the administration of written examinations. Enclosure 3, "Procedures for the Administration of Written Examinations," describes [INSERT [facility-licensee proctor and] FOR FACILITY-ADMINISTERED EXAMINATIONS] applicant responsibilities during the administration of the written examination. Please ensure that [INSERT [the proctor and] FOR FACILITY-ADMINISTERED EXAMINATIONS] all applicants are aware of these rules.

1 [INSERT [Your review of the written examination will be conducted in accordance with the
2 procedures specified in Enclosure 4, "Facility Licensee Review of Written Examinations."] FOR
3 NRC-PREPARED EXAMINATIONS.] [INSERT [Prior to commencing examination development
4 activities, ensure all required staff review and sign the examination security agreement in
5 Enclosure 4, "Facility Licensee Review of Written Examinations."] FOR FACILITY-PREPARED
6 EXAMINATIONS.]
7

8 Signed operator license applications in accordance with Title 10 of the *Code of Federal*
9 *Regulations* (10 CFR) Part 55, "Operators' Licenses," Subpart D, "Applications," certifying that all
10 applicants have successfully completed the requirements to be licensed as a reactor operator or
11 senior reactor operator and that all applicants meet the medical requirements, must be submitted
12 at least 30 working days before the start date of the examination. This will allow the chief
13 examiner time to review the training and experience of the applicants, process the medical
14 certifications, and process the applications. If this review cannot be completed in time to decide
15 an applicant's eligibility, that applicant may not be permitted to sit for the examination. Therefore,
16 it is recommended that license applications be provided as soon as possible to ensure that the
17 review can be completed before the examination.
18

19 The NRC has posted copies of the application forms, "Personal Qualification Statement—
20 Licensee" (NRC Form 398) and "Certification of Medical Examination by Facility Licensee" (NRC
21 Form 396) on the agency's website at [https://www.nrc.gov/reading-rm/doc-](https://www.nrc.gov/reading-rm/doc-collections/forms/index.html)
22 [collections/forms/index.html](https://www.nrc.gov/reading-rm/doc-collections/forms/index.html).
23

24 This letter contains information collection requirements that are subject to the Paperwork
25 Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved
26 by the Office of Management and Budget, approval numbers 3150-0018, 3150-0024,
27 and 3150-0090.
28

29 The burden to the public for these mandatory information collections is estimated to average
30 7.45 hours per combined response for completing the information collections. Send comments
31 regarding this burden estimate or any other aspect of these information collections, including
32 suggestions for reducing the burden, to the Records and Freedom of Information Act/Privacy
33 Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001,
34 or by email to: INFOCOLLECTS@NRC.GOV; and to the Desk Officer, Office of Information and
35 Regulatory Affairs, NEOB-10202, (3150-0018), Office of Management and Budget, Washington,
36 DC 20503.
37

38 The NRC may not conduct or sponsor, and a person is not required to respond to, a request for
39 information or an information collection requirement unless the requesting document displays a
40 currently valid OMB control number.
41

42 If you have any questions on the operator examination procedures and requirements, please
43 contact me at (301) XXX-XXXX, or by email to [INSERT EMAIL ADDRESS].
44

45 Sincerely,
46
47
48

49 [Name], Chief Examiner
50 [Branch Name]

[Division Name]
Office of Nuclear Reactor Regulation

Docket No. 50-[XXX]

Enclosures:

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

cc w/enclosures:

[Name], Reactor Supervisor [if applicable]
[Name], Training Supervisor [if applicable]

ENCLOSURE 1
REFERENCE MATERIAL FOR REACTOR/
SENIOR REACTOR OPERATOR LICENSING EXAMINATIONS

Training materials include all substantive written material used to prepare applicants for initial reactor operator and senior reactor operator licensing. The material should include learning objectives, if available, and details presented during lectures rather than outlines. Training materials should be identified, bound, and indexed. Training materials should include the following:

- (1) System descriptions including descriptions of all operationally relevant flowpaths, components, controls, and instrumentation. System training material should draw parallels to the actual procedures used for operating an applicable system.
- (2) Learning objectives, student handouts, and lesson plans (including training manuals, facility orientation manual, system descriptions, reactor theory, and thermodynamics).
- (3) Complete and operationally useful descriptions of all safety-system interactions and secondary interactions under emergency and abnormal conditions (including consequences of anticipated operator error, maintenance error, and equipment failure).
- (4) Training material used to clarify and strengthen understanding of emergency operating procedures.
- (5) Complete procedure index (including temporary procedures).
- (6) All administrative procedures applicable to reactor operation or safety.
- (7) All integrated facility procedures, normal or general operating procedures, and procedures for experiments.
- (8) All emergency procedures, emergency instructions, and abnormal or special procedures.
- (9) Standing orders or procedures changed by reactor supervision and important orders or changes that are safety-related and may supersede the regular procedures.
- (10) A list of all reactor facility surveillances, with copies of all **COMPLETED** surveillances that require the collection of data (e.g., heat balance, rod drop times, etc.).
- (11) Fuel-handling and core-loading procedures and initial core-loading procedure (if appropriate).
- (12) Any annunciator or alarm procedures, as applicable.
- (13) Radiation protection manual and radiation control manual or procedures.
- (14) Emergency plan and any emergency plan implementing procedures.

- 1 (15) Safety analysis report (including any changes made under Title 10 of the *Code of Federal*
2 *Regulations* 50.59, “Changes, tests, and experiments,” that have not been incorporated
3 into the material being submitted) and technical specifications.
4
5 (16) System operating procedures, including experiments.
6
7 (17) Piping and instrumentation diagrams, electrical single-line diagrams, and flow diagrams.
8
9 (18) Technical data book, facility curve information, or both, as used by operators and facility
10 precautions, limitations, and setpoints.
11
12 (19) Questions and answers specific to the facility training program that may be used in the
13 written or operating examinations (voluntarily provided by the facility licensee).
14
15 (20) Facility modification authorizations, which were authorized since the last revision to the
16 safety analysis report.
17
18 (21) Additional material as requested by the examiners to develop examinations that meet
19 regulations and the operator licensing examiner standards.
20
21 The above reference material should be the approved, final issuances and should be so marked.
22 If a facility licensee has not finalized some of the material, then the chief examiner should verify
23 with the facility licensee that the most complete, up-to-date material is available and reach an
24 agreement with the facility licensee for limiting changes before the administration of the
25 examination.

ENCLOSURE 2
ADMINISTRATION OF WRITTEN EXAMINATIONS

- (1) A single room must be provided for administration of the written examination. This room and supporting restroom facilities should be located so as to prevent contact with other facility personnel during the written examination.
- (2) Minimum spacing is necessary to ensure examination integrity. The chief examiner (CE) will determine whether the room has adequate area to support minimum spacing between examination applicants to ensure examination integrity.
- (3) The CE will review any arrangements made by the facility licensee to give the applicants lunch, coffee, or other refreshments. These arrangements shall comply with item 1 above.
- (4) The facility licensee may provide clean, unused 8.5 by 11-inch paper for the applicants' use in completing the examination. The examiner will distribute this paper as needed.
- (5) Applicants may bring pens, pencils, and calculators into the examination room. Black ink or dark pencils should be used for writing answers to questions. Calculators that have memory or storage capacity must be verified by an examiner to be cleared or empty before the examination. Applicants shall not bring tablets, cell phones, or other communications or electronic devices or recorders into the examination room.
- (6) The CE must approve any wall charts, models, training materials, equipment, or reference material present in the examination room. Otherwise, the material must be removed before the written examination administration.
- (7) The CE will give the facility licensee staff a copy of the written examination with an answer key at the beginning of the examination.
- (8) The facility licensee staff has 5 working days to submit formal written comments with supporting documentation regarding written examination questions and answers to the CE.

ENCLOSURE 3
PROCEDURES FOR THE ADMINISTRATION OF
WRITTEN EXAMINATIONS

- (1) Verify candidate identity from government-issued identification, or other official identification, that includes the candidate's full legal name.
- (2) Instruct applicants not to review the examination until told to do so. Pass out examinations and handouts.
- (3) Announce the start time of the examination.

NRC RULES FOR WRITTEN EXAMINATION ADMINISTRATION

READ THE FOLLOWING INSTRUCTIONS VERBATIM:

- (1) Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
- (2) When you have completed your examination, you must sign the statement at the bottom of the cover sheet in front of the examiner or NRC-authorized proctor. This indicates that the work is your own and that you have not received or given assistance in completing the examination.

READ THE FOLLOWING INSTRUCTIONS:

With the start of the examination, you must comply with the following rules. These rules are in effect within the examination area (DEFINE THE AREA), until the last candidate has handed in their examination:

- (1) Only restroom trips are allowed and limited to only one applicant at a time. You must avoid all contact with anyone or any materials outside the examination room to preclude even the appearance of cheating. No conversation with other individuals or other stops are allowed.
- (2) Use black ink or dark pencil only to facilitate legible reproductions.
- (3) Print your name in the blank provided in the upper right corner of the examination cover sheet and each answer sheet.
- (4) Mark your answers on the answer sheet(s) provided. The answer sheet contains places to circle the correct answer or fill in the correct answer and a blank space to put your final answer if you have changed your choice.
- (5) The point value for each question is shown in brackets after the question.
- (6) If the intent of a question is unclear, ask questions of the examiner or proctor only.
- (7) There is a time limit of 3 hours for the written examination.

- 1 (8) You must achieve a grade of 70 percent or greater overall and in each category to pass
2 the examination.
3
- 4 (9) When turning in your examination, assemble the completed examination with
5 examination questions, examination aids, answer sheets, and all scrap paper. Give the
6 examiner your answer sheet(s) along with the signed cover sheet. Take all other material
7 collected with you out of the examination area.
8
- 9 (10) After turning in your written examination, leave the examination area. If you are observed
10 in this area while the examination is still in progress, your license may be denied or
11 revoked.

1 **ENCLOSURE 4**

2 **FACILITY LICENSEE REVIEW OF WRITTEN EXAMINATIONS**

3 [INSERT FOR NRC-PREPARED EXAMINATIONS ONLY:
4

- 5 (1) At the option of the appropriate U.S. Nuclear Regulatory Commission (NRC)
6 management, the facility licensee staff may review the written examination up to 2 weeks
7 before its administration. This review may take place at the facility or at an NRC office.
8 The chief examiner (CE) will coordinate the details of the review with the facility licensee.
9 The facility licensee staff may not retain copies of the examination or any written notes.

10
11 When using this option, the facility licensee staff reviewers must sign the following
12 statement before being allowed access to the examination.]
13

14 a. Preexamination Security Agreement:

15
16 I _____ acknowledge that I have acquired specialized knowledge
17 [Print Name]
18 concerning the examination scheduled for _____ at _____
19 [Print Date] [Print Facility Name]
20 as of the date of my signature below. I agree that I will not knowingly divulge any information
21 concerning this examination to any unauthorized persons. I understand that I am not to
22 participate in any instruction involving those applicants scheduled to be administered the above
23 examination from this date until after the examination has been administered. I further
24 understand that violation of the conditions of this agreement may result in the examinations
25 being canceled, enforcement action against myself or the facility licensee by whom I am
26 employed or represent, or both.
27

28
29 _____
30 Signature/Date
31

32
33 In addition, the facility licensee staff [INSERT [reviewers] FOR NRC-PREPARED
34 EXAMINATIONS OR [preparers] FOR FACILITY-PREPARED EXAMINATIONS] will sign the
35 following statement after the written examination has been administered.
36

37 b. Postexamination Security Agreement:

38
39
40 I _____ did not, to the best of my knowledge, divulge any information
41 [Print Name]
42 concerning the examinations administered during the week of _____ at _____
43 [Print Date] [Print Facility Name]
44 or provide any instruction to those applicants who were administered the examination from the
45 date I entered into this security agreement until the completion of examination administration.
46

47
48 _____
49 Signature/Date

(2) The facility licensee staff will be given a copy of the examination and the answer key at the beginning of the examination. A copy will be kept of any pen and ink changes made to questions during the examination administration.

If members of the facility licensee staff did not review the examination before its administration, they will have 5 working days from the day of the written examination to submit formal comments. If the facility licensee staff reviewed the examination before its administration, they must submit any additional comments before the examiner leaves the facility. The appropriate facility licensee management representative will address the comments to the CE. The NRC will consider comments submitted after the required period on a case-by-case basis. This may cause delays in grading the examinations.

(3) The facility licensee should submit comments in the following format:

- List the question category and number, and state the comment along with a recommendation for correction (e.g., delete the question or accept two correct answers).
- Support the comment with a reference, and provide a copy of the reference if it was not included in the original reference material submitted.

NOTES:

(1) No change to the examination will be made without a reference to support the facility licensee comment. Provide any supporting documentation not previously supplied.

(2) Comments made without a concise facility recommendation will not be addressed.

(3) Comments not submitted within the requested time will be included in the grading process on a case-by-case basis as determined by the NRC. Comments not submitted within the requested time will delay the examination grading process.

(4) A multiple-choice question that has no correct answer or more than two correct answers will be deleted. A multiple-choice question that has two correct answers will give credit for either answer.

ATTACHMENT 2
SAMPLE EXAMINATION ASSIGNMENT SHEET

NOTE TO: (CE) [Name, Title, and Affiliation]
FROM: (OLA) [Name, Title, and Affiliation]
SUBJECT: EXAMINATION ASSIGNMENT SHEET ([REPORT NO. AND
FACILITY NAME])

APPLICANT	DOCKET NO.	EXAMINATION TYPE
		RO SRO-I SRO-U SRO/RO (retake Category A, B, or C)

Facility and location	_____
Facility licensee contact	_____
Written examination to be prepared by	_____
Dates of examination	_____

cc: [Project manager]
 Branch chiefs]
(Standard Headquarters distribution)

Examination Report No. 50-[Number]

ADAMS Accession No. ML[Number]

2.2 ELIGIBILITY REQUIREMENTS AND GUIDELINES

A. Purpose

This standard provides instructions for reviewing reactor operator license applications. It identifies the experience, training, education, and certification requirements and guidelines that applicants should satisfy before they will be allowed to take a license examination.

B. Reviewing License Applications

Subpart D of 10 CFR Part 55 outlines the regulatory requirements associated with the operator license application process. The CE will review license applications to determine whether the applicants meet the requirements specified in 10 CFR 55.31, 10 CFR 55.33, and 10 CFR 55.35 for initial license applicants. The CE should refer to these requirements as necessary when reviewing operator license applications. The CE will indicate whether the applicant meets the requirements or not and sign NRC Form 398, "Personal Qualification Statement—Licensee."

As stated by the regulations in 10 CFR 55.35(b), an applicant who has previously passed a portion of the NRC examination may request on a new NRC Form 398 to be **excused** from reexamination on the portions of the examination or test that the applicant has passed. The Commission may, at its discretion, grant the request if it determines that sufficient justification is presented (10 (see 10 CFR 55.35(b)). The justification should address why reexamining the applicant on the passed portion is not necessary. For example, an applicant that passed the written Category B & C but failed Category A, may request with sufficient justification to be excused from Category B & C of the written examination. Additionally, an applicant that passed the written examination but failed the operating test, may request with sufficient justification an excusal from the written examination. These examples are not all inclusive and the determinations will depend on the submitted justifications.

As stated by the regulations in 10 CFR 55.47, "Waiver of examination and test requirements," an applicant may request a **waiver** of any or all examination and test requirements in certain circumstances. For example, if a previously licensed individual were to leave the facility and return or change positions within the facility to a position no longer needing a license and return to the licensed position within a 2-year window. Another example may be an individual who was licensed at a comparable facility with extensive actual operating experience within the past 2 years. These examples are not all inclusive and the determinations will depend on the submitted information.

1. Initial License Applications

- a. All applicants must submit an NRC Form 398 and an NRC Form 396, "Certification of Medical Examination by Facility Licensee," using the most recent revision available. (Computer-generated duplicates are acceptable.) An application is not complete until both forms are filled out and signed by the appropriate facility licensee staff.

Detailed instructions are provided with the forms.

- b. The facility licensee senior management representative certifies the applicant by completing and signing NRC Form 398 and NRC Form 396. Both forms must be submitted to the NRC at least 30 working days before the examination date. Forms not

submitted within this time frame may result in delaying the examination or the eligibility determination for taking an examination.

The CE will review applications against the specific RO or SRO eligibility guidelines described in Section D of this examiner standard, process the medical certifications, evaluate any waiver, excusal, or deferral requests (refer to ES 2.3), and request any additional information that might be necessary under 10 CFR 55.31(b).

- c. If the CE determines that an application is incomplete or that the applicant does not meet the requirements in 10 CFR 55.31, the CE will note the deficiencies on the application and request additional information under 10 CFR 55.31(b). If, after receipt of additional information, the CE determines that the applicant still does not meet the eligibility requirements, the CE will discuss the matter with the BC. If reasonable attempts to satisfy the deficiencies are unsuccessful, then the BC will notify the applicant in writing that the application is being denied and provide the deficiencies on which the denial is based (Attachment 1).

The CE will check the *Does Not Meet Requirements* block on NRC Form 398 and sign and date the form. Applicants who do not meet eligibility requirements will not be permitted to take a license examination.

An applicant who receives a denial may request a review of the denial by the NRC staff or demand a hearing according to 10 CFR 2.103(b)(2). ES 5.2 provides further information on this topic.

- d. For an applicant who does not meet the eligibility requirements, any subsequent application will be an initial license application and reviewed in accordance with the guidance above.

2. Reapplications

An applicant applying after a license denial must submit new NRC Forms 398 and 396 (refer to 10 CFR 55.35). The NRC will not process an application if the applicant has a pending request for NRC staff review or demand for a hearing on the previous license denial (refer to ES 5.2). The CE will review the application as described in Section B.1, subject to the additional conditions described in the following paragraphs.

- a. If the first application was denied because the applicant failed the written examination, operating test, or both, the applicant may file a new application.
- b. The applicant may request an excusal from reexamination on the portions of the written examination or operating test that the applicant passed. (Refer to ES 2.3 for further guidance.)
- c. The application will describe the extent of training since the denial.
- d. Facility licensee management must certify on NRC Form 398 that the applicant has received sufficient additional training at the facility and that the results of that training have been objectively evaluated to ensure that the applicant is ready for reexamination, as well as prepared to safely assume the duties and responsibilities of a licensed operator.

1 **C. Licensing Medical Requirements**

2
3 Subpart C of 10 CFR Part 55 specifies the medical requirements for license applicants and
4 licensed operators.

5
6 The regulations in 10 CFR Part 55 require an applicant for an operator license to submit an
7 NRC Form 396. Detailed instructions for completing NRC Form 396 are provided with the form.
8 The CE will evaluate the information in NRC Form 396 for consistency with the specified
9 guidance used by the facility licensee. If the facility licensee submits a form stipulating “other”
10 for the guidance used, the form will be forwarded for evaluation by the NRC medical reviewer.
11 No operator licenses shall be issued until the NRC staff finds the medical examination to be
12 adequate.

13
14 The NRC staff’s practice with respect to a notification of change in operator or senior operator
15 status and receipt of a new NRC Form 396 has been to send the information to a qualified
16 medical reviewer, except for minor medical changes such as glasses, hearing aids, and
17 continuous positive airway pressure (CPAP) treatment, through NRC Form 396A, “Transmittal
18 of NRC Form 396 for Medical Review.” The NRC staff instructs the NRC medical reviewer using
19 NRC Form 396A to evaluate license condition requests submitted on NRC Form 396 and
20 supporting medical evidence for ANSI/ANS standard compliance.

21
22 The medical reviewer may respond to the NRC staff in several ways. First, the medical reviewer
23 may find that the applicant’s medical status is satisfactory for licensing with no restrictions or
24 conditions (see 10 CFR 55.33(a)(1) regarding the health finding for an unconditioned initial
25 license). Second, the medical reviewer may find that the applicant’s medical status is
26 satisfactory for licensing only if additional conditions are placed on the operator or senior
27 operator (see 10 CFR 55.33(b) regarding conditional licenses). Third, the medical reviewer may
28 find that the identified medical condition disqualifies the operator or senior operator applicant
29 from receiving a license. The medical reviewer may also determine that a medical review cannot
30 be completed until additional medical evidence is submitted. The medical reviewer documents
31 their review and provides it to the NRC staff via NRC Form 396A.

32
33 Initial license applicants are generally expected to be examined and certified as fit (on NRC
34 Form 396) no more than 6 months before application submittal. If more than 6 months have
35 passed since the date of an applicant’s last medical examination or fitness certification on NRC
36 Form 396, the applicant and facility licensee shall certify in writing in the “Comments” section of
37 NRC Form 398 that the applicant has not developed any physical or mental condition that would
38 be reportable under 10 CFR 55.25, “Incapacitation because of disability or illness.”

39
40 If the applicant’s physical or mental condition has changed, or the time since the applicant’s last
41 complete medical examination is expected to exceed 24 months before the licensing action is
42 completed, the applicant shall be reexamined and the facility licensee shall recertify the
43 applicant’s medical fitness on NRC Form 396.

44
45 The NRC staff will consider a waiver of the requirement to submit an updated NRC Form 396 if
46 an applicant is reapplying for a license (because of the withdrawal of a previous application, the
47 denial of a previous application, or the termination of a previous license at the same facility), if
48 an examination is delayed from its originally scheduled date, or if the issuance of the license
49 has been deferred, provided that the 24-month requirement is not exceeded and that comments
50 are included in the NRC Form 398.

D. Initial License Eligibility Guidelines

The initial license eligibility guidelines are summarized as follows.

Certification:

A senior management representative of the facility licensee shall certify the following requirements on NRC Form 398. This certification must include details of the applicant's qualifications and details on courses of instruction administered by the facility licensee and describe the nature of the training received at the facility and the startup and shutdown experience received.

1. Reactor Operator Applications

a. Training

The training shall include the following:

- (1) Sufficient design and content to ensure safe operation of the facility.
- (2) Topics identified in Section 5 of ANSI/ANS-15.4 to satisfy the requirements of 10 CFR 55.31(a)(4).
- (3) Operation of the reactor and its systems under the supervision of licensed ROs and/or SROs (facility staffing dependent).
- (4) Manipulation of the controls of the reactor (refer to 10 CFR 55.31(a)(5)). Every effort should be made to diversify the control manipulations. Examples of control manipulations include reactor startups and shutdowns and power changes by an amount of sufficient magnitude to allow for the observation and response to clear effects of the manipulations on the facility by the applicant trainee.

b. Education

The applicant should have a high school diploma or an equivalency certificate (e.g., a General Educational Development (GED) or home-schooling certificate). Individuals who have not completed high school or its equivalency should not be excluded. Previous job-related experience or education should also be considered. If an applicant is still attending high school, then the facility licensee should carefully review the applicant's eligibility and justification for selection into the operator licensing training program.

c. Experience

The applicant should have sufficient experience at the facility as a trainee to have completed the facility licensee's operator licensing training program.

2. Senior Reactor Operator—Instant Applications

a. Training

The training shall include the following:

- (1) Sufficient design and content to ensure safe operation of the facility.
- (2) Topics identified in Section 5 of ANSI/ANS-15.4 to satisfy the requirements of 10 CFR 55.31(a)(4).
- (3) Operation of the reactor and its systems under the supervision of licensed ROs and/or SROs (facility staffing dependent).
- (4) Manipulation of the controls of the reactor (refer to 10 CFR 55.31(a)(5)). Every effort should be made to diversify the control manipulations. Examples of control manipulations include reactor startups and shutdowns and power changes by an amount of sufficient magnitude to allow for the observation and response to clear effects of the manipulations on the facility by the applicant trainee.

b. Education

The applicant should have a high school diploma or an equivalency certificate (e.g., a GED or home-schooling certificate). Individuals who have not completed high school or its equivalency should not be excluded. Previous job-related experience or education should also be considered. If an applicant is still attending high school, then the facility licensee should carefully review the applicant's eligibility and justification for selection into the operator licensing training program.

c. Experience

The applicant should have a minimum of 3 years of nuclear experience. A maximum of 2 years of full-time relevant academic training may be substituted for 2 years of experience. The remaining 1 year of experience should be at the facility or at a significantly similar facility. When considering experience, it is important to provide justification that the applicant has the skills and knowledge commensurate with their level of responsibility and that their decisions and actions during all normal and abnormal conditions are such that the reactor is operated safely. Additional guidance on this 1 year of nuclear experience at the facility requirement can be found in ANSI/ANS-15.4 and under "Experience" of ES 2.2.E of this NUREG.

If the applicant does not meet the 1 year of nuclear experience at the facility requirement at the time of the examination, a deferral request may be submitted, with justification, in order to take the examination. In addition to the completion of the facility SRO training program, the justification must show previous relevant supervisory experience and qualifications. The CE should seek guidance from the BC when applicants do not meet the 1 year of nuclear experience at the facility requirement.

3. Senior Reactor Operator—Upgrade Applications

a. Training

The training shall include the following:

- (1) Sufficient design and content to ensure safe operation of the facility.

- (2) Topics identified in Section 5 of ANSI/ANS-15.4 in support of 10 CFR 55.31(a)(4).
- (3) Operation of the reactor and its systems as a licensed RO or under the supervision of licensed ROs and SROs.
- (4) Manipulation of the controls of the reactor, including significant control manipulations that affect reactivity or power level (refer to 10 CFR 55.31(a)(5)). Every effort should be made to diversify the control manipulations. Examples of significant control manipulations include reactor startups and shutdowns and power changes by an amount of sufficient magnitude to allow for the observation of clear effects on the plant by the operator.

b. Education

The applicant should have a high school diploma or an equivalency certificate (e.g., a GED or home-schooling certificate). Individuals who have not completed high school or its equivalency should not be excluded. Previous job-related experience or education should also be considered. If an applicant is still attending high school, then the facility licensee should carefully review the applicant's background for selection into the training program.

c. Experience

The applicant should have a minimum of 1 year of experience as an RO at the facility or meet the requirements for an SRO-I listed above.

E. NRC Form 398, "Personal Qualification Statement—Licensee"

Applicants for operator licenses must submit a personal qualification statement (NRC Form 398). The form must be completely filled out per the instructions and signed by the appropriate personnel. Those categories or items that are not applicable to operators of non-power reactors will be marked "NA." Additional specific guidance for the NRC staff's review of NRC Form 398 is as follows.

Current Position at Facility

Many items are not applicable to non-power reactors. Therefore, the "other" designation should be used to describe the applicant's position (e.g., facility director, chief reactor supervisor, etc.). The blocks for "Senior Control Room Operator" and "Control Room Operator" are applicable only to licensed personnel. An unlicensed control room operator trainee should be listed as "Trainee."

Training

This section should contain only training received specifically for the license for which the application is submitted. Non-power reactors normally do not have a training program that excludes other concurrent activities; therefore, the period of training should be identified (month and year) and condensed to the appropriate number of weeks. For example, an applicant spends 4 months in training from June 1, 2022, through September 30, 2022, with 2 hours per week devoted to fundamentals, 2 hours per week tracing systems, 1 hour per week in the

control room, and 1 hour per week in actual manipulation (with two reactivity changes per manipulation). The condensed training would be from June 2022 to October 2022 and include approximately 1 week (16 weeks x 2 hours per week) of fundamentals, 1 week of facility systems observation, 1 week of control room operations, and 32 significant control manipulations. Numbers do not have to be precise but should be representative.

- *Classroom* should identify training conducted in a classroom setting.
- *Simulator* is not applicable to non-power reactors that do not have a Commission approved simulator.
- *SRO Instruction* should be used to identify SRO-level training given in preparation for an SRO-level license examination.
- *Extra Person on Shift in Control Room* is not applicable to non-power reactors.
- *Other* should be used to describe time spent in the facility in training (e.g., time spent tracing systems, time in the control room observing or operating, etc.).
- ANSI/ANS-15.4 contains additional guidance on training criteria.

Experience

Experience must be current up to the date of the application. Applicable experience gained at other non-power reactors and nuclear power plants, as well as any military experience, should be included. In all cases, the applicant should fully describe their experience.

The descriptions provided under “Significant Control Manipulations” on NRC Form 398 also apply to the experience discussion under “Nuclear Experience Details” on NRC Form 398.

To assess the applicant’s eligibility for the remaining 1 year of nuclear experience at the facility, discussed under ES 2.2.D of this NUREG, the facility licensee should submit information related to the numbers of hours spent during on-the-job training that is equivalent to the 1 year of nuclear experience. If the applicant has recent experience at a significantly similar facility or significant equivalent nuclear experience in a supervisory role or directing actions related to safe reactor operations, the facility licensee should describe the experience and provide justification for why it is equivalent to the 1 year of nuclear experience at the facility requirement. The applicant should fully describe their experience under the “Duties” column on NRC Form 398.

The following information should be considered in determining the type of information needed to assess the applicant’s eligibility for the remaining 1 year of nuclear experience:

- ANSI/ANS-15.4-2016, Section 2, “Definitions,” defines “nuclear experience” as:

Experience acquired in reactor facility start-up activities or operation. Experience in design, construction, maintenance, or related technical services that are job-related may also be considered. On-the-job training at the reactor facility may qualify as equivalent nuclear experience on a one-for-one-time basis. Appropriate research or teaching or both may be includable as nuclear experience.

1 **F. NRC Form 396, “Certification of Medical Examination by Facility Licensee”**

2
3 Applicants for initial operator licenses are required by 10 CFR 55.31(a)(6) to submit NRC
4 Form 396 as part of their application. Detailed instructions for completing NRC Form 396 are
5 provided with the form.
6

7 **H. Attachments/Forms**

8
9 Attachment 1, “Sample Initial Application Denial”

ATTACHMENT 1
SAMPLE INITIAL APPLICATION DENIAL

[NRC Letterhead]

[Date]

[Applicant Name]
[Street Address]
[City, State, Zip Code]

Dear [Name]:

This letter is to inform you that your application dated [date] for a [reactor operator, senior reactor operator, or limited senior reactor operator] license submitted for the [facility name] is hereby denied.

[Branch to discuss deficiencies and which part of 10 CFR 55.31, ES 2.2, or ANSI/ANS-15.4 was involved.] When you have met the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 55.31, "How to apply," you may submit another application.

Under 10 CFR 2.103(b)(2), you may demand an adjudicatory hearing about this denial of your application within 20 days after the date of this letter. Under 10 CFR 2.307(a), you may request an extension of this time limit if you can show good cause.

A demand for a hearing shall be filed in accordance with 10 CFR Part 2, "Agency Rules of Practice and Procedure," which is accessible electronically on the U.S. Nuclear Regulatory Commission's (NRC's) website at <https://www.nrc.gov/reading-rm/doc-collections/cfr/>. Generally, a demand for a hearing should explain why you believe that the NRC denied your application in error and why you believe that you have, in fact, satisfied the requirements.

[Consult with the Office of the General Counsel for the most up-to-date E-Filing language.]

A demand for a hearing must be filed in accordance with the NRC's E-Filing Rule (Volume 72 of the *Federal Register*, page 49139; August 28, 2007). The E-Filing process requires participants to submit and serve all adjudicatory documents over the internet or, in some cases, to mail copies on electronic storage media. Detailed guidance on making electronic submissions may be found in the Guidance for Electronic Submissions to the NRC and on the NRC website at <https://www.nrc.gov/site-help/e-submittals/contact-us-eie.html>. Participants may not submit paper copies of their filings unless they seek an exemption in accordance with the procedures described below.

To comply with the procedural requirements of E-Filing, at least 10 days before the filing deadline, the participant should contact the Office of the Secretary by email to Hearing.Docket@nrc.gov or by telephone to 301-415-1677 to (1) request a digital identification (ID) certificate, which allows the participant (or its counsel or representative) to digitally sign submissions and access the E-Filing system for any proceeding in which it is participating and (2) advise the Secretary that the participant will be submitting a demand for a hearing. Based on this information, the Secretary will establish an electronic docket for the hearing in this proceeding if the Secretary has not already done so.

1 Information about applying for a digital ID certificate is available on the NRC's public website at
2 <https://www.nrc.gov/site-help/search.html?site=AllSites&searchtext=EIE>. Once a participant has
3 obtained a digital ID certificate and a docket has been created, the participant can then submit a
4 demand for a hearing. Submissions must be in Portable Document Format (PDF). A filing is
5 considered complete at the time the document is submitted through the NRC's E-Filing system.
6 To be timely, an electronic filing must be submitted to the E-Filing system no later than 11:59
7 p.m. eastern time on the due date. Upon receipt of a transmission, the E-Filing system time-
8 stamps the document and sends the submitter an email notice confirming receipt of the
9 document. The E-Filing system also distributes an email notice that provides access to the
10 document to the NRC's Office of the General Counsel and any others who have advised the
11 Office of the Secretary that they wish to participate in the proceeding, so that the filer need not
12 serve the document on those participants separately. Therefore, applicants and other
13 participants (or their counsel or representative) must apply for and receive a digital ID certificate
14 before adjudicatory documents are filed so that they can obtain access to the documents
15 through the E-Filing system.

16
17 A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance
18 by contacting the NRC's Electronic Filing Help Desk through the "Contact Us" link located on the
19 NRC's public website at <https://www.nrc.gov/site-help/e-submittals/contact-us-eie.html>, by email
20 to MSHD.Resource@nrc.gov, or by a toll-free call to 1-866-672-7640. The NRC Electronic Filing
21 Help Desk is available between 9 a.m. and 6 p.m. eastern time, Monday through Friday,
22 excluding Government holidays.

23
24 Participants who believe that they have a good cause for not submitting documents
25 electronically must file an exemption request, in accordance with 10 CFR 2.302(g), with their
26 initial paper filing stating why there is good cause for not filing electronically and requesting
27 authorization to continue to submit documents in paper format. Such filings must be submitted
28 by (1) first-class mail addressed to the Office of the Secretary of the Commission, U.S. Nuclear
29 Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemaking and
30 Adjudications Staff, or (2) courier, express mail, or expedited delivery service to the Office of the
31 Secretary, 11555 Rockville Pike, Rockville, MD 20852, Attention: Rulemaking and Adjudications
32 Staff. Participants filing adjudicatory documents in this manner are responsible for serving the
33 document on all other participants. Filing is considered complete by first-class mail as of the
34 time of deposit in the mail, or by courier, express mail, or expedited delivery service upon
35 depositing the document with the provider of the service. A presiding officer, having granted an
36 exemption request from using E-Filing, may require a participant or party to use E-Filing if the
37 presiding officer subsequently determines that the reason for granting the exemption from use
38 of E-Filing no longer exists.

39
40 Documents submitted in adjudicatory proceedings will appear in the NRC's electronic hearing
41 docket, which is available to the public at <https://adams.nrc.gov/ehd/>, unless excluded pursuant
42 to an order of the Commission or the presiding officer. If you do not have an NRC-issued digital
43 ID certificate as described above, click "cancel" when the link requests certificates, and you will
44 be automatically directed to the NRC's electronic hearing dockets where you will be able to
45 access any publicly available documents in a particular hearing docket. Participants are asked
46 not to include personal privacy information, such as social security numbers, home addresses,
47 or personal phone numbers in their filings, unless an NRC regulation or other law requires
48 submission of such information. For example, in some instances, individuals provide home
49 addresses to demonstrate proximity to a facility or site. With respect to copyrighted works,
50 except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute

1 a Fair Use application, participants are asked not to include copyrighted materials in their
2 submission.

3
4 If you have any questions, please contact [name] at [telephone number] or via email at
5 [name]@nrc.gov.

6
7 Sincerely,
8

9
10
11
12 [Branch Chief or Program Director with Program
13 Responsibility]

14 Docket No. 55-[number]

15
16 cc: [senior management facility representative who signed the applicant's NRC Form 398]

2.3 PROCESSING OPERATOR LICENSING WAIVERS/EXCUSALS

A. Purpose

This standard provides guidance for processing waiver/excusal requests from RO and SRO license applicants.

B. Background

To speed the processing of an applicant's waiver/excusal request(s), the NRC management has delegated the authority to grant the waiver/excusal of certain operator licensing requirements to the CE. The CE may grant the types of waiver/excusal requests identified in Section D.1 of this standard without first obtaining BC approval. The BC will then document the granted approval.

C. General Guidelines

1. Submittal of Waiver/Excusal Requests

The applicant may request a waiver/excusal of a license requirement by checking the appropriate block on NRC Form 398 *and* providing a justification.

2. Evaluation of Waiver/Excusal Requests

The CE will evaluate waiver/excusal requests on a case-by-case basis. If there is insufficient information upon which to base a decision, the CE will request additional information from the facility licensee according to ES 2.2.

Waiver/excusal requests may be denied if the evaluation and judgment of the NRC staff so warrant. The staff will document the disposition of every waiver/excusal request, whether granted or denied, by completing the *For NRC Use* block on the applicant's application.

After any waiver/excusal requests have been reviewed and approved (or denied), the CE will forward the application to the operator licensing assistant (OLA) responsible for NPUFOL Program docket files.

The OLA will create a 10 CFR Part 55 docket folder for each new applicant and prepare letters informing the applicant of the final disposition of any application-specific waivers or excusals (refer to ES 2.3). The OLA will forward waiver/excusal/deferral letters to the CE for review prior to sending to the BC for signature. The OLA will dispatch waiver/excusal/deferral letters to the applicant. The waiver/excusal/deferral letters should be dispositioned prior to establishing the examination assignment sheet. The OLA will then prepare an examination assignment sheet (Attachment 2 to ES 2.1) in advance of the examination date. The examination assignment sheet will identify all assigned examiners by name and list the applicants by name, docket number, and the type of examination they are to take.

All applicants listed on the examination assignment sheet should be administered complete examinations (written and operating) as indicated under *Examination Type* unless the NRC has granted waivers or excusals in accordance with ES 2.3. A copy of the examination assignment sheet will be distributed to all examiners assigned, the BC, and the facility project manager. The examination assignment sheet, which can be found in the NRC's Agencywide Documents

Access and Management System (ADAMS), will be updated to reflect any changes to the examinations as they are administered.

3. Notification of Applicants

The NRC staff will notify the applicant in writing of the disposition of the applicant's waiver/excusal request(s) when the decision to grant or deny the request is made. If time is too short to notify the applicant in writing before the examination date, the CE will notify the facility licensee's training representative by telephone, with a memorandum to the applicant's docket file.

If the applicant is determined to be ineligible to take the license examination, the NRC staff will issue a denial letter according to ES 2.2.

D. Excusals and Waivers

1. Routine

- a. If an applicant fails any category of the written examination, but has a passing grade overall for the examination, the CE may excuse, on the applicant's next examination, the applicant from reexamination on those examination categories that were passed. For candidates who have a failing grade overall for the examination, the candidate must retake the written examination in its entirety.
- b. The medical data in support of NRC Form 396 remain acceptable for 6 months from the date of the medical examination. For reapplications (e.g., following a license denial, an application withdrawal, or a reinstatement request for a terminated license at the facility) or for an examination that is delayed from its originally scheduled date, the NRC may grant waivers extending this 6-month period, provided that the date of the medical examination is within 24 months of the anticipated licensing date and that the "Comments" section of NRC Form 398 certifies that the applicant has not developed any physical or mental condition that would be reportable under 10 CFR 55.25. For SRO-U applicants, the medical examination documented on NRC Form 396 is normally good for 2 years from the date of the medical examination, provided that there are no changes in medical status requiring documentation submission.
- c. The NRC staff will consider examination waivers for applicants with extensive actual operating experience not currently holding a license depending on the justification provided by the facility licensee pursuant to 10 CFR 55.47, "Waiver of examination and test requirements."

2. Nonroutine

For all other waiver/excusal requests, the CE will make the appropriate recommendations to the NRC management. The NRC management will grant or deny the waiver/excusal request. NRC management concurrence is not required for a waiver/excusal decision made by the CE in accordance with Section D.1 of this standard.

3.0 OPERATING TESTS

3.1 PREPARATION OF OPERATING TESTS

A. Purpose

As required by 10 CFR Part 55, all applicants for an RO or SRO license must take an operating test, unless it has been waived or excused under either 10 CFR 55.35 or 10 CFR 55.47 (refer to ES 2.3). The specific content of the operating test will depend on the type of license and the type of facility for which the applicant has applied. This standard describes the procedure for developing operating tests according to the requirements of 10 CFR 55.45.

The term “examiner” as used in this standard refers to either facility-licensee staff who prepare operating tests or NRC staff who prepare operating tests. When necessary to distinguish between the two, “facility examiner” or “NRC examiner” is used.

B. Definitions

- **Applicant:** An individual who has submitted an NRC Form 398 in pursuit of an operator license. For the purposes of this and other examination standards, it is synonymous with “candidate.” See the individual license level definitions in ES 2.2.
- **Category:** A major subdivision of related subjects on the operating test.
- **Operating test:** The portion of the operator licensing examination based on direct interaction between an examiner and an applicant. It tests the applicant’s knowledge of the design and operation of the reactor.
- **Scenario:** An integrated group of events composing a set of facility malfunctions and evolutions performed or discussed using the reactor.

C. Regulatory Basis

The operating test requires the applicant to show an understanding of and the ability to perform the actions necessary to accomplish a representative sample from among the following 13 items identified in 10 CFR 55.45(a):

- (1) Perform pre-startup procedures for the facility, including operating of those controls associated with facility equipment that could affect reactivity.
- (2) Manipulate the console controls as required to operate the facility between shutdown and designated power levels.
- (3) Identify annunciators and condition-indicating signals and perform appropriate remedial actions, where appropriate.
- (4) Identify the instrumentation systems and the significance of facility instrument readings.
- (5) Observe and safely control the operating behavior characteristics of the facility.

- (6) Perform control manipulations required to obtain desired operating results during normal, abnormal, and emergency situations.
- (7) Safely operate the facility's heat removal systems, including primary coolant, emergency coolant, and decay heat removal systems, and identify the relations of the proper operation of these systems to the operation of the facility.
- (8) Safely operate the facility's auxiliary and emergency systems, including operation of those controls associated with reactor equipment that could affect reactivity or the release of radioactive materials to the environment.
- (9) Demonstrate or describe the use and function of the facility's radiation monitoring systems, including fixed radiation monitors and alarms, portable survey instruments, and personnel monitoring equipment.
- (10) Demonstrate knowledge of significant radiation hazards, including permissible levels in excess of those authorized, and ability to perform other procedures to reduce excessive levels of radiation and to guard against personnel exposure.
- (11) Demonstrate knowledge of the emergency plan for the facility, including, as appropriate, the operator's or senior operator's responsibility to decide whether the plan should be executed and the duties under the plan assigned.
- (12) Demonstrate the knowledge and ability as appropriate to the assigned position to assume the responsibilities associated with the safe operation of the facility.
- (13) Demonstrate the applicant's ability to function within the control room team as appropriate to the assigned position, in such a way that the facility licensee's procedures are adhered to and that the limitations in its license and amendments are not violated.

D. Level of Examination—Facility Type

Non-power reactors vary widely in their complexity. To account for this, examinations are developed using a graded approach. Non-power reactors have been classified into three levels of complexity: Complex, Moderate, and Simple. Complex facilities are those licensed to operate at 500 kilowatts or greater, simple facilities are AGN-200 series reactors, and Moderate facilities are all other non-power reactors. Attachment 2, "Facility Listing by Type," to this standard is a table listing non-power reactors by type and it is current as of the date of issuance of this NUREG.

The following guidelines may be helpful in differentiating between operating test levels for the three levels of non-power reactor complexity.

All operating tests will contain three categories—Category A (Administrative Topics), Category B (Facility Walkthrough), and Category C (Integrated Facility Operations). However, the requirement for the minimum number of systems tested in Category C is facility-level dependent, as follows:

- **Complex:** A minimum of nine systems are tested covering as many of the six areas as applicable.
- **Moderate:** A minimum of six systems are tested covering as many of the six areas as applicable.
- **Simple:** A minimum of three systems are tested covering as many of the six areas as applicable.

E. Level of Examination—License Type

The license for which the applicant applies also dictates the depth and scope of operating tests. In addition to the knowledge, skills, and abilities monitored for RO applicants, SRO applicants must be evaluated on additional knowledge, skills, and abilities, such as their ability to evaluate facility conditions during abnormal and emergency conditions and to direct others, both reactor staff and outside support agencies, in recovery operations. All SRO applicants will be examined for the highest on-shift position (e.g., shift supervisor).

The examiner's review of the reference material may supply some guidance for developing an operating test that is in concert with the assignment of duties and responsibilities at that non-power reactors.

The following guidelines may be used to help differentiate between RO and SRO operating tests:

- (1) SROs must have a broader, more thorough knowledge of facility administrative controls, including limitations imposed by regulations and limitations stated in the technical specifications, along with their bases.
- (2) SROs are often assigned comprehensive actions during emergencies and abnormal conditions and should display knowledge of these assignments. If the facility's procedures allow for the SRO to be on call, then the RO should display this knowledge.
- (3) SROs are often assigned responsibilities for auxiliary systems outside the control room that are not normally operated by licensed operators. A common example is the waste disposal and handling system for which the licensed operator's responsibility ends when the fluid passes the last instrument that has console display. However, the SRO is often responsible for ensuring that facility limits for maximum permissible concentration, effluent release rates, and other aspects are not exceeded.

The SRO-I operating test is the most comprehensive because the applicant must be evaluated for both RO and SRO levels of responsibility. The examiner must be assured that the applicant has the necessary skills and abilities as an RO and has the required knowledge and supervisory capabilities to function as an SRO.

F. Source Material

The content of the operating test will be based on licensed RO or SRO duties as described in the non-power reactors safety analysis report, system description manuals, operating procedures, license and license amendments, licensee event reports, and other materials received from the facility licensee. (NOTE: This is the material requested from the facility licensee in the preexamination letter described in ES 2.1.) In addition, the operating test may contain RO and SRO duties described in 10 CFR Part 50 and 10 CFR Part 55.

G. Requirements

The operating test is divided into three major categories—Category A (Administrative Topics), Category B (Facility Walkthrough), and Category C (Integrated Facility Operations).

When preparing operating tests, the examiner should pre-script questions to the maximum extent possible. For facility-prepared operating tests, the facility licensee should submit all pre-scripted questions to the CE for review with sufficient time prior to the examination to resolve any comments from the CE. There will be some questions for which the answer will not be known until the examiner is on site (especially for modified systems and procedures). In addition, any questions asked to follow up on perceived applicant weaknesses must be documented for subsequent review and grading purposes. The examiner must remember to document the safety significance of the weakness.

1. Category A

Category A covers topics associated with the administrative control of the facility, which are divided into three subcategories. The examiner should cover all topics and all subcategories as applicable to the non-power reactors. The preparation and administration of Category A questions will be basically the same at all three types of non-power reactors.

In developing Category A questions, the examiner may use previously developed questions from either an NRC or facility examination bank or may develop new open-reference questions. In either case, the questions asked should be pre-scripted to the maximum extent possible. Any questions asked to follow up on perceived applicant weaknesses must be documented for subsequent review and grading purposes.

The following descriptions should be used as guidelines for developing or selecting questions to ascertain or confirm minimal applicant competency within each subcategory:

a. Subcategory A.1

Subcategory A.1 evaluates the applicant's knowledge of the administrative requirements associated with the operation of the facility. For example, information dissemination questions may be asked within the framework of conducting a shift turnover or integrated into other discussions as they apply throughout the operating test.

b. Subcategory A.2

Subcategory A.2 addresses radiation protection, a subject area in which there is significant deviation between the knowledge expected of an RO and of an SRO. RO responsibilities generally entail knowledge associated with radiation worker responsibilities and operation of facility systems associated with liquid and gaseous waste releases. SROs, however, are also involved in the approval of release permits and should be aware of the requirements associated

1 with those releases and their potential effect on the health and safety of the public. A discussion
2 or simulated performance of a planned release may be used when examining these topics.

3
4 If possible, the examiner should enter a radiologically controlled area during the facility
5 walkthrough. This offers an excellent opportunity to discuss most of the radiological control
6 subjects in Subcategory A.2. A task with follow-up questions is also an appropriate method for
7 evaluating this subcategory.

8 9 c. Subcategory A.3

10
11 In Subcategory A.3 there are significant differences between the knowledge required of ROs
12 and of SROs for all three topics—the emergency plan, fuel handling, and the security plan. For
13 the emergency plan, ROs typically only have to be able to implement the facility emergency plan
14 implementing procedures (EPIPs). A basic familiarity with the plan and their responsibilities is
15 appropriate for the RO applicant.

16
17 SROs must display knowledge based on their responsibility to direct and manage the
18 implementation of the EPIP during the initial phases of an emergency. SROs must be familiar
19 with event classification procedures and communication requirements and methods and have a
20 more detailed overall understanding of the EPIP. These requirements also apply to an RO if the
21 facility's procedures assign the RO as acting emergency director in the absence of the SRO.

22
23 Fuel handling should be covered in the fuel-handling areas of the facility. The knowledge and
24 skills should be appropriate to the facility-specific requirements for the applicant's license level.
25 Examiner guidance is best found in the facility's procedures associated with fuel-handling
26 operations.

27
28 The RO should be aware of their duties in the control room during fuel handling (i.e., alarms
29 from the fuel-handling area, communication with the fuel storage facility, systems operated from
30 the control room in support of fueling operations, and supporting instrumentation). For the SRO,
31 this subject should cover information such as the delivery of new fuel, moving new or spent fuel,
32 the storage of new or spent fuel, the design of the fuel-handling area, tools used, and casualty
33 operations.

34
35 An RO applicant may be evaluated on security by observing their behavior during the
36 examination. An SRO applicant should be questioned on applicable aspects of the facility's
37 security plan.

38 39 **2. Category B**

40
41 Category B tests the applicant's knowledge of system design and operation. The examiner will
42 evaluate the applicant's ability to perform tasks and to answer questions on specific systems.

43
44 Attachment 1, "Systems for Operating Tests," to this standard lists examples of systems
45 typically found at non-power reactors. Note that attachment 1 may not be all inclusive. The
46 examiner should select systems from this list as appropriate for the specific non-power reactors.
47 If an examination is administered over the course of 2 or more days, the examiner should vary
48 coverage of systems and subjects across test administrations to enhance test integrity.

49
50 For Complex facilities, the examiner should evaluate RO and SRO-I applicants on at least nine
51 systems from all applicable categories listed in Attachment 1. For Moderate facilities, the
52 examiner should evaluate RO and SRO-I applicants on at least six systems from all applicable
categories listed in Attachment 1. For SRO-U applicants from all facilities and RO and SRO-I

1 applicants from Simple facilities, the examiner should evaluate each applicant on at least three
2 systems from at least three different categories listed in Attachment 1. For all SRO applicants,
3 the examiner will include questions, one task evaluating the applicant's ability to carry out
4 actions required during an emergency or abnormal condition, or both.

5
6 Tasks and pre-scripted questions may be selected from existing facility examination banks, if
7 available. The examiner may choose to annotate procedures with clarifying comments on how
8 to execute particular steps, as well as identifying critical steps. Critical steps are those steps that
9 when not performed correctly, in the proper sequence, or at the proper time, will prevent the
10 system from functioning properly or preclude successful completion of the task. To evaluate a
11 subject area satisfactorily, the examiner will ask enough questions to determine the applicant's
12 knowledge.

13
14 When using the facility's examination bank, the examiner may use no more than 10 percent of
15 the questions associated with the particular system being evaluated. If the examiner determines
16 that additional questions must be asked to clarify the observed performance, the question and
17 the response must be fully documented to allow for postexamination review.

18 19 **3. Category C**

20
21 Category C covers integrated facility operations through the use of scenarios. Scenarios must
22 be prepared in advance to ensure a proper balance of events and sufficient basis to evaluate
23 operator competency in all required knowledge and abilities (K/As). The examiner must ensure
24 that the scenarios adequately cover the following integrated facility operations test
25 requirements:

- 26
27 (1) Each scenario must require the applicant to operate during normal and reactivity
28 evolutions, instrument failures, component failures, and major facility transients. The
29 table below specifies the minimum requirements for the type and number of events for a
30 scenario set.
31
32 (2) In addition to the events, there is a requirement to examine individual competencies for
33 the RO and SRO license levels. Form ES-3.1-1, "Research Reactor and Test Reactor
34 Operator Licensing Individual Examination Report," describes these competencies in
35 detail.

36
37 For clarity, these two major requirements are discussed separately, although they are used
38 integrally during scenario development, administration, and grading.

39 40 **a. Transients and Events**

41
42 A scenario is a set of events designed to cover a combination of the six different types of facility
43 evolutions, equipment failures, and facility transients discussed below (meeting the
44 requirements of the table at the end of this section).

- 45 (1) **Normal evolutions:** Examples include system lineups, pre-startup checkouts, shifting
46 rod control mode between automatic and manual, and critical checks (e.g., excess
47 reactivity measurements).
48
49 (2) **Reactivity evolutions:** Examples include reactor startup, power maneuvering,
50 experiment manipulation, and pulsing operations.
51

- 1 (3) **Instrument failures:** These include failures of nuclear, control, process, and radiation
2 detection instrumentation.
3
- 4 (4) **Component failures:** These include failures of significant reactor equipment or
5 components that cause significant system response and require operator action to
6 correct. Examples of component failures are control rod failure (stuck or dropped), pump
7 failure, and piping failure.
8
- 9 (5) **Major transients:** These include facility transients that lead to an automatic protective
10 action. Examples are reactor trip/scram or engineered safety system actuation.
11
- 12 (6) **Major transients (with entry into emergency plan):** These include transients that lead
13 to automatic protective actions such as a reactor trip/scram or an engineered safety
14 system actuation with subsequent entry implementation of the facility emergency plan or
15 EIPs.
16

17 As required by 10 CFR 55.45(a)(2), all RO and SRO-I applicants must perform a reactor startup.
18 The startup should include performance or discussion of pre-startup checks (which provide a
19 good opportunity for systems-related discussions), startup of the facility to a critical condition,
20 ascension to a typically maintained power level, and placing control of the reactor in automatic
21 (if available). After completion of the startup, control of the reactor may be turned over to a
22 licensed operator. In the extraordinary situation in which a system failure occurs after the
23 examiners arrive on site and precludes reactor startup, examinations should be rescheduled to
24 a period when the reactor is available for this evolution.
25

26 RO applicants are required to operate the reactor during at least one normal evolution and one
27 reactivity evolution and to react to at least one instrument failure, one component failure, and
28 one major transient (actual or simulated).
29

30 Scenarios for SRO-I applicants will include all event types tested for an RO applicant plus an
31 additional major transient tailored to SRO supervisory skills and knowledge of the facility
32 emergency plan. SRO-I applicants will be evaluated for both operational and supervisory K/As.
33

34 SRO-U applicants will be given credit for having an RO license and will normally not be required
35 to manipulate the controls or be evaluated during a reactivity evolution. However, if the
36 examiner detects weaknesses during the test, additional scenarios, including a startup, may be
37 used to observe and evaluate the applicant's ability to manipulate the controls. Also, the SRO-U
38 applicant will be tested on only one major transient tailored to SRO supervisory skills and
39 knowledge of the facility emergency plan. The SRO-U will be evaluated primarily for supervisory
40 K/As.
41

42 These minimum requirements for scenario events are intended to ensure that a range of events
43 and evolutions is exercised in each Category C of the operating test. Scenarios should be
44 developed such that a variety of systems are affected within each type of event (i.e., normal
45 evolutions, instrument failures, component failures, and major transients). The severity of events
46 and the demands they place on the applicants should be balanced to allow each applicant to
47 show competency across a range of conditions.
48

Applicant	RO	SRO-I	SRO-U
Normal Evolution	1 ¹	1 ¹	0
Reactivity Evolution	1 ¹	1 ¹	0
Instrument Failure	1 ²	1 ³	1 ⁴
Component Failure	1 ²	1 ³	1 ⁴
Major Transient	1 ²	1 ³	0
Major Transient (implementation of emergency plan)	0	1 ³	1 ⁴

- 1 Normal and reactivity evolutions may be combined for RO and SRO-I candidates.
- 2 Either instrument failure or component failure may be combined with a major transient for RO candidates.
- 3 Either instrument failure or component failure may be combined with either a major transient or major transient (implementation of emergency plan) for SRO-I candidates; however, the major transient and major transient (implementation of emergency plan) may not be combined.
- 4 Either instrument failure or component failure may be combined with a major transient (implementation of emergency plan) for SRO-U candidates.

b. Scenario Development Guidelines

To achieve the maximum benefit of using the non-power reactors for evaluation, the following guidelines are recommended in preparing scenarios:

- Normal evolutions can be used as a backdrop on which to stage the emergency or abnormal situations. For example, an examiner may provide verbal cues that the reactor period indication is not responding to a normal power change.
- Selected short surveillances may be used to examine the applicant's manipulation of controls (e.g., exercising safety rods) and should be combined with other activities, such as a reactor startup.
- The interactions of systems and components can be used to evaluate an operator's knowledge by having one failure cause or exacerbate another failure. Within each scenario, the events should be selected such that successive equipment failures lead to a gradual and logical deterioration in facility status; a series of unrelated and isolated events should be avoided. Avoid having one failure fully mask the symptoms of another failure because this can cause a scenario to be deficient in covering the required types of evolutions. The scenarios should incorporate facility-specific and generic industry operating experience.

H. Attachments/Forms

Form ES-3.1-1, "Research and Test Reactor Operator Licensing Individual Examination Report"

Attachment 1, "Systems for Operating Tests"

Attachment 2, "Facility Listing by Type"

Attachment 3, "Example Areas of Discussion for Category A: Administrative Topics"

Attachment 4, "Example Areas of Discussion for Category B: Facility Walkthrough"

1

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NRC FORM ES-3.1-1		Page 1 of 6	
RESEARCH AND TEST REACTOR OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT			
CANDIDATE NAME:		CANDIDATE DOCKET NUMBER:	
FACILITY NAME:		FACILITY COMPLEXITY:	
INITIAL EXAMINATION		RETAKE EXAMINATION	
	REACTOR OPERATOR	REACTOR OPERATOR	
	SENIOR OPERATOR (INSTANT)	SENIOR OPERATOR (INSTANT)	
	SENIOR OPERATOR (UPGRADE)	SENIOR OPERATOR (UPGRADE)	
WRITTEN EXAMINATION SUMMARY			
PREPARED BY:		DATE ADMINISTERED:	GRADED BY or GRADING REVIEWED BY (NRC use only):
CATEGORY A SCORE %	CATEGORY B SCORE %	CATEGORY C SCORE %	OVERALL SCORE %
OPERATING TEST SUMMARY			
ADMINISTERED BY:			DATE:
CATEGORY A SCORE	CATEGORY B SCORE	CATEGORY C SCORE	OVERALL SCORE
GRADING RESULTS – NRC use only			
	PASS	FAIL	WAIVE/EXCUSE
WRITTEN EXAMINATION			GRADER/GRADING REVIEWER: DATE:
OPERATING TEST			GRADER/GRADING REVIEWER: DATE:
POSTEXAMINATION PEER REVIEWER			GRADER/GRADING REVIEWER: DATE:
CHIEF EXAMINER RECOMMENDATION			CHIEF EXAMINER: DATE:
LICENSE RECOMMENDATION – NRC use only			
		BRANCH CHIEF:	DATE:
	ISSUE LICENSE		
	DENY LICENSE		

2

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RESEARCH AND TEST REACTOR OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT

FACILITY NAME:

CANDIDATE DOCKET NUMBER:

Operating Test

Category A: ADMINISTRATIVE TOPICS

SUBJECT AREA	Individual Evaluation
1. Support and Conduct of Operations	
a. Modifications to Procedures and Equipment (e.g., 10 CFR 50.59 and facility procedures/forms)	
b. Surveillance Testing and Corrective Maintenance Requirements (e.g., ability to isolate equipment and components (tagouts, equipment lockouts), surveillance procedures, and official form location)	
c. Information Dissemination (e.g., night orders, shift turnover logs, status boards)	
d. Startup Requirements (e.g., pre-startup procedures/forms, technical specifications, required equipment)	
e. Operational Limits and Requirements (e.g., safety limit (SL), limiting safety system setting (LSSS), limiting conditions for operation (LCO), shift turnover process)	
2. Radiation Health Physics	
a. Radiation Sources and Hazards (e.g., N ¹⁶ , Ar ⁴¹ , H ³ , Na ²⁴ , open beam ports, sample removal, pneumatic tubes)	
b. Portable Radiation Monitoring Equipment (e.g., Geiger-Müller tubes, ion chambers, scintillation detectors, pocket dosimeters)	
c. Exposure Limits and Control (e.g., 10 CFR Part 20 limits, local facility limits, deep dose vs shallow dose, annual limits on intake)	
d. Radiation Work Permits/Release of Radioactive Materials (including waste)	
3. Implementation of NRC-Required Procedures	
a. Security (at the proper level (RO/SRO/management))	
b. Fuel Handling (e.g., 10 CFR Part 55, technical specifications, procedures)	
c. Emergency Plan (e.g., classifications, responsibilities, implementing procedures)	

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RESEARCH AND TEST REACTOR

OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT

FACILITY NAME:

CANDIDATE DOCKET NUMBER:

Operating Test**CATEGORY B: FACILITY WALKTHROUGH**

SYSTEM/TASK TITLE ¹	SYSTEM TYPE ¹	GRADE	Comment Page
1.	MAJ		
2.	EXP		
3.	ESF		
4.	INST		
5.	RDS		
6.	AUX ²		
7.			
8.			
9.			
10.			

2 ¹ For all RO and SRO-I candidates: Test the minimum number of systems for the reactor type from as many
3 different areas as possible. Complex facilities: minimum of nine systems; Moderate facilities: minimum of
4 six systems; Simple facilities: minimum of three systems. For SRO-U candidates at ALL reactor types: Test a
5 minimum of three systems from as many different areas as applicable.

6 ² For many Moderate and for all Simple facilities, there are no applicable systems within this area.

7 **PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY**8 **PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY**

NRC FORM ES-3.1-1

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RESEARCH AND TEST REACTOR
OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT

FACILITY NAME:

CANDIDATE DOCKET NUMBER:

Operating Test

CATEGORY C: INTEGRATED FACILITY OPERATIONS

INITIAL CONDITIONS:

TURN OVER:

EVENT NUMBER	PERFORM/ DISCUSS	EVOLUTION TYPE	
1			
2			
3			
4			
5			
6			
7			
8			
9			

1 **PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY**

**RESEARCH AND TEST REACTOR
OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT**

FACILITY NAME:

CANDIDATE DOCKET NUMBER:

**OPERATING TEST OUTLINE AND GRADING
CATEGORY C: INTEGRATED FACILITY OPERATIONS
COMPETENCY GRADING CHECK SHEET****1. Identification of Cues, Alarms, Annunciators, and Trends**

	WEIGHT	3.0	2.0	1.0	ACTUAL
a. Recognize & Acknowledge	0.30	0.90	0.60	0.30	
b. Locate, Interpret, & Verify Status	0.40	1.20	0.80	0.40	
c. Prioritize Problems	0.30	0.90	0.60	0.30	

INDIVIDUAL COMPETENCY GRADE**2. Diagnosis of and Response to Conditions**

	WEIGHT	3.0	2.0	1.0	ACTUAL
a. Diagnose Conditions	0.40	1.20	0.80	0.20	
b. Report Conditions	0.20	0.60	0.40	0.40	
c. Effect of Actions	0.40	1.20	0.80	0.20	

INDIVIDUAL COMPETENCY GRADE**3. Procedures and Technical Specifications**

	WEIGHT	3.0	2.0	1.0	ACTUAL
a. Recognize Entry Conditions	0.40	1.20	0.80	0.40	
b. Compliance	0.30	0.90	0.60	0.30	
c. Reference	0.30	0.90	0.60	0.30	

INDIVIDUAL COMPETENCY GRADE**4. Control Board Basics**

	WEIGHT	3.0	2.0	1.0	ACTUAL
a. Locate and Manipulate Controls	0.33	1.00	0.67	0.33	
b. Understanding	0.33	1.00	0.67	0.33	
c. Manual Control	0.33	1.00	0.67	0.33	

INDIVIDUAL COMPETENCY GRADE

1

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NRC FORM ES-3.1-1		Page 6 of 6
RESEARCH AND TEST REACTOR OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT		
FACILITY NAME:	CANDIDATE DOCKET NUMBER:	
OPERATING TEST OUTLINE AND GRADING COMMENT PAGE		
SUBJECT INDEX	COMMENT	

2

PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY

ATTACHMENT 1

SYSTEMS FOR OPERATING TESTS

MAJOR SYSTEMS (MAJ)

Primary System
Secondary System
Makeup Water System/Purification System
Pool System(s)
Reactor Design/Construction
Neutron Source

RADIATION DETECTION SYSTEMS (RDS)

Area Radiation Monitoring
Gaseous Radiation Monitoring
Air Particulate Radiation Monitoring
Liquid Effluent Radiation Monitoring
Fission Product Monitoring
Portable Monitors (Ion Chambers and Geiger-Müller Tubes)

EXPERIMENTAL FACILITIES (EXP)

Beam Tube
In-Core Irradiation
Pneumatic Tube System
In-Pool Irradiation Facilities
Lazy Susan
Thermal Column
Medical Exposure Facilities
Exposure Rooms
Hydraulic Tube System

ENGINEERED SAFETY FEATURES (ESF)

Core Spray
Pool Makeup/Fill Systems
Containment/Reactor Building Isolation
Anti-Siphoning System

AUXILIARY SYSTEMS (AUX)¹

Service Air
Reactor Building Air Recirculation
Liquid Waste System
Solid Waste System
Gaseous Waste System
Normal Alternating Current (AC) Supply
Emergency AC
Emergency Direct Current (DC)
Batteries
Motor Generators
Power Inverters
Diesels/Gas Engines

INSTRUMENTATION SYSTEMS (INST)

Startup Channel (Proportional Counters)
Log-N Channel (Compensated Ion Chambers)
Safety Channel(s) (Uncompensated Ion Chambers)
N¹⁶ Detectors
Temperature Detectors (Resistance Temperature Device, Thermocouples)
Flow Detectors (Orifices, Change in Pressure Cells)
Control/Safety Rod Drive Systems
Annunciator Systems
Rod Position Indicating Systems
Automatic Rod Positioning Systems
Reactor Protective System

¹ For many Moderate and for all Simple facilities, there are no applicable systems within this area.

1
2
3

ATTACHMENT 2 FACILITY LISTING BY TYPE

COMPLEX

1. National Institute of Standards and Technology (NIST), 50-184 (TEST)
2. University of Missouri - Columbia, 50-186 (TANK)
3. Massachusetts Institute of Technology, 50-020 (TANK)
4. Rhode Island Atomic Energy Commission, 50-193 (POOL)
5. University of California - Davis, McClellan Nuclear Research Center, 50-607 (TRIGA)
6. University of Texas, 50-602 (TRIGA)
7. Armed Forces Radiobiology Research Institute, 50-170 (TRIGA)
8. Oregon State University, 50-243 (TRIGA)
9. Texas A&M University, 50-128 (TRIGA)
10. United States Geological Survey (USGS), Department of the Interior, 50-274 (TRIGA)
11. Pennsylvania State University, 50-5 (TRIGA)
12. University of Wisconsin, 50-156 (TRIGA)
13. Washington State University, 50-27 (TRIGA)
14. University of Massachusetts - Lowell, 50-223 (POOL)
16. North Carolina State University, 50-297 (PULSTAR)

MODERATE

1. Dow Chemical Company, 50-264 (TRIGA)
2. Kansas State University, 50-188 (TRIGA)
3. Reed College, 50-288 (TRIGA)
4. University of California - Irvine, 50-326 (TRIGA)
5. University of Maryland, 50-166 (TRIGA)
6. University of Missouri - Rolla, 50-123 (POOL)
7. Rensselaer Polytechnic Institute, 50-225 (Cr. Ex.)
8. University of Florida, 50-83 (ARGONAUT)
9. University of Utah, 50-407 (TRIGA)
10. Ohio State University, 50-150 (POOL)
11. Purdue University, 50-182 (LOCKHEED)

SIMPLE

1. Idaho State University, 50-284 (AGN-201)
2. Texas A&M University, 50-59 (AGN-201)
3. University of New Mexico, 50-252 (AGN-201)

4 This listing is current as of the date of issuance of this NUREG.

ATTACHMENT 3
EXAMPLE AREAS OF DISCUSSION FOR CATEGORY A: ADMINISTRATIVE
TOPICS

- Interpret and execute procedure steps.
- Knowledge of the process for making design or operating changes to the facility. (SRO)
- Knowledge of the process for changing procedures.
- Knowledge of required level of authorization or approval before use of procedures with minor changes (typos), significant changes, and temporary procedures.
- Knowledge of how Title 10 of the *Code of Federal Regulations* (10 CFR) 50.59, "Changes, tests, and experiments," is integrated into the process. (SRO)
- Knowledge of surveillance procedures.
- Knowledge of tagging and clearance procedures.
- Knowledge of pre- and post-maintenance operability requirements. (SRO)
- Ability to determine operability and availability of safety-related equipment. (SRO)
- Knowledge of shift or short-term relief turnover practices.
- Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10 CFR Part 55, etc.
- Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
- Knowledge of administrative requirements for temporary management directives, such as standing orders, night orders, operations memos, etc.
- Ability to make accurate, clear, and concise verbal reports.
- Ability to make accurate, clear, and concise logs, records, status boards, and reports.
- Knowledge of conduct of operations requirements.
- Knowledge of criteria or conditions that require facility wide announcements, such as pump starts, reactor trips, mode changes, etc.
- Ability to interpret reference materials, such as graphs, curves, tables, etc.
- Ability to explain and apply system limits and precautions.
- Knowledge of limiting conditions for operation and safety limits.
- Knowledge of the bases in technical specifications for limiting conditions for operation and safety limits.
- Knowledge of conditions and limitations in the facility license.
- Ability to apply technical specifications for a system.
- Ability to recognize system parameters that are entry-level conditions for technical specifications.

ATTACHMENT 4
EXAMPLE AREAS OF DISCUSSION FOR CATEGORY B: FACILITY
WALKTHROUGH

All knowledge is considered to be at the reactor operator (RO) level:

Ability to evaluate reactor performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.

Knowledge of criteria or conditions that require facility wide announcements, such as pump starts, reactor trips, mode changes, etc.

Ability to interpret reference materials, such as graphs, curves, tables, etc.

Knowledge of system purpose and function.

Knowledge of the purpose and function of major system components and controls.

Ability to locate and operate components, including local controls.

Ability to explain and apply system limits and precautions.

Knowledge of procedures and limitations involved in core alterations.

Knowledge of the refueling process.

Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel-handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.

Ability to apply technical specifications for a system.

Ability to recognize system parameters that are entry-level conditions for technical specifications.

Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect reactor and system conditions.

Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel-handling responsibilities, access to locked high-radiation areas, aligning filters, etc.

Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.

Operation of fission chambers and ion chambers.

Neutron monitoring indication units.

Effects of voltage changes on neutron detector performance.

Failure modes of fission chambers, ion chambers, and proportional counters.

Operation of ion chambers, Geiger-Müller tubes, and scintillation detectors.

Use of portable radiation monitoring instruments.

Effect of excessive differential pressure on demineralizer performance.

- 1 Reason for sampling inlet and outlet of demineralizer.
2
3 Effects of channeling in a demineralizer.
4
5 Purpose of a demineralizer.
6
7 Purpose of demineralizer differential pressure gauge.
8
9 Reason for demineralizer temperature and flow limits.
10
11 Principles of demineralizer operation.
12
13 Demineralizer differential pressure to determine condition of demineralizer resin bed.
14
15 Effects of demineralizer operation on water conductivity.
16
17 *For Piping and Ventilation Systems:*
18 Demonstrate a working knowledge of the following:
19 • system flowpath by walkthrough, drawing, or both, including major components and
20 instrumentation
21 • system or component purpose, uses, and interlocks
22 • component status (open/close, running/stopped) in normal and abnormal lineups
23 • system/component abnormal/emergency lineups
24 • routine readings, checks, and technical specification surveillance procedures
25 *For Nuclear Instrumentation and Radiation Monitoring Equipment:*
26 Demonstrate a working knowledge of the following:
27 • detector types, range of detection, location, and scale of readouts
28 • system and component purpose, uses, interlocks, and automatic actions

3.2 ADMINISTRATION OF OPERATING TESTS

A. Purpose

This standard describes the procedure for administering operating tests according to the requirements of 10 CFR 55.45. It assumes that the NRC or facility examiner has prepared for the operating test according to ES 3.1.

The term “examiner” as used in this standard refers to either facility-licensee staff who administer operating tests or NRC staff who administer operating tests. When necessary to distinguish between the two, “facility examiner” or “NRC examiner” is used.

B. Personnel Present

The number of persons present during an operating test should be limited to ensure the integrity of the test and to reduce distractions to the applicant. According to 10 CFR 55.13, a licensed RO or SRO must be present when doing reactivity manipulations. If the number of persons or the noise level in the control room is excessive, the examiner should have the facility licensee staff address the issue.

Except for the licensed RO or SRO and facility examiner (for facility-administered operating tests), no other member of the facility licensee training or operations staff will be allowed to witness an operating test without the permission of the CE. Under **no** circumstances is another applicant allowed to witness an operating test. Operating tests are not to be used as training vehicles for future applicants. Videotaping/recording the administration of initial operating tests is not allowed.

Examiners may witness an operating test as part of their training or to audit an examiner administering the operating test. Other observers, such as NPUFOL staff, researchers, or NRC supervisors, may be allowed to observe operating tests if (1) the CE has approved the request to observe the test and (2) the applicant does not object to the observer's presence.

C. Operating Test Withdrawals

Occasionally, an applicant will withdraw from the operating test just before it starts. If this happens, the examiner will request a letter from the facility licensee withdrawing the applicant's application. This letter should be addressed to the CE who will forward it to the OLA for inclusion in the applicant's docket file.

In rare instances, an applicant will withdraw after the operating test has begun. The examiner will inform the applicant that this is an examination failure and that they must reapply following the rules of 10 CFR 55.35. Applicants who withdraw from the operating test after it has started will be sent a denial letter.

D. Administration Procedures

1. General

The examiner will use Attachment 1, “Operating Test Briefing Checklist,” to this standard to brief each candidate before beginning the operating test.

2. Administrative Topics

a. Subcategory A.1

These questions are not intended to duplicate administrative system requirements covered in Categories B and C (e.g., valve lineups, control room data system administration and use, etc.). However, the administration of the walkthrough and the scenario is often the best time to ask these questions, in conjunction with the questions associated with Categories B and C. The CE must ensure that sufficient material is covered during the administration of each topic to make a licensing determination.

b. Subcategory A.2

Subcategory A.2 subjects are also best covered during the conduct of tasks or questioning associated with Category B, while walking around the facility in the vicinity of various radiation equipment.

c. Subcategory A.3

The examiner may best evaluate the applicant's emergency plan knowledge by integrating it into a Category C transient discussion or by conducting a Category B task requiring its use. Security may best be evaluated by observing the applicant's demeanor and answers to seemingly innocent questions concerning doors, restrictions on experimenters and operations personnel, and similar topics.

ES 3.1, Attachment 3, "Example Areas of Discussion for Category A: Administrative Topics," should be used in the development of administrative questions.

3. Facility Walkthrough

The examiner should encourage the applicant to draw diagrams, flowpaths, and other visual representations. Likewise, the examiner should encourage the applicant to use facility forms, schedules, procedures, and similar materials, as appropriate. In addition, if it clarifies the question, the examiner may present a drawing for interpretation by the applicant.

The examiner should retain any supporting material used during an operating test to provide additional documentation in support of a pass or fail determination.

The examiner can improve the efficiency of the operating test by integrating discussions required to complete the various categories. This is particularly true for parts of Category C that must be conducted in a discussion format. For example, by postulating an abnormal facility condition, such as a reactor trip/scram, the examiner may include related tasks and associated subject area questions to cover systems in Category B.

The examiner must take sufficient notes during the operating test to document all applicant deficiencies thoroughly. The examiner must cross-reference every comment to a specific task or subject area question. The examiner must ensure that sufficient material is covered during the administration of each system to make a licensing determination.

ES 3.1, Attachment 4, "Example Areas of Discussion for Category B: Facility Walkthrough," should be used in the development of facility walkthrough questions.

4. Integrated Facility Operations

Just before starting a scenario, the examiner may review it with the licensed RO or SRO. This review should familiarize the licensed RO or SRO with the sequence of the scenario events to ensure that the scenario will go as planned with respect to the capabilities and limitations of the facility and the anticipated applicant actions. Precautions should be taken so that the scenarios are not revealed to an applicant before their test begins (see Form ES-3.2-1, “Examination Security Agreement.”)

If the applicant acts in a way other than expected, the examiner should note these actions (or lack of actions). The notes must provide sufficient information to allow the examiner to judge the applicant’s performance with respect to the competencies described in Form ES-3.3-1, “RO/SRO Competency Grading Guidance for Integrated Facility Operations.” Each examiner must determine the best way to document applicant actions. Some examiners record a minute-by-minute account of all key facility events and operator actions that occur, while others record only the candidate’s significant actions. It is left to the individual examiner to develop their own technique. However, the documentation must provide an adequate basis for making a licensing decision.

The examiner should limit discussions with the applicant during the reactor startup both to maintain realism and to avoid distracting the applicant from operating the facility. The examiner should limit questions asked during the scenario performance to those necessary to assess the candidate’s understanding of facility conditions and required operator actions. Even these questions should be deferred until a time (such as during breaks) when the applicant is not operating or closely monitoring the reactor facility. After the applicant has completed the required manipulation, the reactor may be turned over to the licensed RO or SRO or be shut down to conduct the remainder of the questions and answers. The examiner’s follow-up questions or concerns can often be addressed during a brief question-and-answer period after each scenario or during the facility walkthrough portion of the operating test if it is conducted after the integrated facility operations scenarios.

If the reactor facility becomes inoperable, the CE should discuss the situation with the applicable BC so that a decision on the conduct of the operating test can be made. It may be necessary to substitute discussions of transient operating conditions or to reschedule the operating test for a later date.

E. Attachments/Forms

Attachment 1, “Operating Test Briefing Checklist”
Form ES-3.2-1, “Examination Security Agreement”

ATTACHMENT 1
OPERATING TEST BRIEFING CHECKLIST

Part A—Applicable to All Operating Tests

- (1) Senior operator applicants are tested at the level of responsibility of the senior licensed shift position (i.e., shift supervisor, senior shift supervisor, or whatever the position may be titled).
- (2) (If applicable, e.g., for NRC-administered operating tests) I am a visitor. Escort responsibilities for ensuring compliance with safety, security, and radiation protection procedures rest with you (the applicant).
- (3) Do not operate facility equipment without appropriate permission.
- (4) Do not hesitate to request clarification of a question during the operating test.
- (5) Frequently, I will stop to update my notes to document your performance. The amount of note-taking is not indicative of your level of performance.
- (6) Operating tests are considered open reference. Any reference material in the facility normally available to operators is also available to you. This includes calibration curves, previous log entries, piping and instrument diagrams, calculation sheets, and procedures. However, you are responsible for knowing automatic actions, setpoints and interlocks, operating characteristics, and the immediate actions of emergency and other procedures, as appropriate to the facility.
- (7) There is no specific time limit for the operating test. The test will take whatever time is necessary to cover the selected areas in the depth and scope required. Typically, an RO test lasts between 3 and 3-1/2 hours, an SRO-I test lasts between 3-1/2 and 4 hours, and an SRO-U test lasts between 2-1/2 and 3 hours.
- (8) I am not allowed to reveal the results of the operating test at its conclusion.
- (9) Do not hesitate to request a break during the operating test.
- (10) During the operating test you will be evaluated for your actions as if you were the actual watch stander. Please operate the reactor as if you were licensed, with the exception that you should announce your actions, then pause momentarily to give the operator of record time to correct you or stop you, if necessary, before you actually perform the action. In addition, the examiner will be observing that you meet all conditions of your license (e.g., wearing corrective lenses to perform licensed duties).

1 **Part B—Just before Reactor Startup**

2
3 Briefing to the candidate and the licensed RO or SRO:

- 4
- 5 (1) I will not intentionally ask you (the applicant) to perform an action that violates facility
6 regulations or procedures or that places the facility in a hazardous condition. If a
7 requested action meets one of these conditions, then you (the applicant) or you (the
8 licensed operator) should immediately inform me. If my intent was to find out whether
9 you (the applicant) would perform such an act, I will phrase the question in some manner
10 other than requesting that the act be performed.
11
- 12 (2) My presence does not alter the normal chain of command during the operating test. You
13 (the applicant) should make all reports and obtain all permissions that would normally be
14 required. All directions to the applicant will come from the responsible supervisor
15 following the facility administrative procedures. I will only question you (the applicant)
16 and make requests of the supervisor.
17
- 18 (3) I have not altered the setpoints or calibrations of any instrument nor have I manipulated
19 any controls.
20
- 21 (4) It is your (licensed operator) responsibility to step in and take control of the reactor any
22 time there is an unsafe condition or if you think that the reactor will shut down if
23 conditions are not corrected. However, you may not provide any coaching or cuing to the
24 applicant.

1 **FORM ES-3.2-1**
2 **EXAMINATION SECURITY AGREEMENT**

3
4 **Preexamination Security Agreement**

5
6
7 I _____ agree that I will not knowingly divulge any information
8 [Print Name]
9 concerning the operating tests scheduled for _____ to any unauthorized
10 [Print Date]
11 persons. I understand that I am not to participate in any instruction involving the reactor operator
12 or senior reactor operator applicants scheduled to be administered the above operating tests
13 from now until after the operating tests have been administered. I further understand that
14 violation of the conditions of this agreement may result in the operating tests being canceled
15 and/or enforcement action against me or the facility licensee by whom I am employed or
16 represent.
17
18
19

20 _____
21 Signature/Date
22
23
24
25
26
27

28 **Postexamination Security Agreement**
29
30

31 I _____ did not, to the best of my knowledge, divulge any
32 [Print Name]
33 information concerning the operating tests administered on _____ to any
34 [Print Date]
35 unauthorized persons. I did not participate in providing any instruction to the reactor operator
36 and senior reactor operator applicants who were administered the operating tests from the time
37 I was allowed access to the operating tests until the completion of the administration of the
38 operating tests.
39
40
41

42 _____
43 Signature/Date

3.3 GRADING OPERATING TESTS

A. Purpose

This standard describes the procedures for grading operating tests administered according to 10 CFR 55.45. It includes methods for documenting all aspects of the operating test, making pass or fail recommendations, and reviewing the documentation to ensure a quality product.

The term “examiner” as used in this standard refers to either facility-licensee staff who grade operating tests or NRC staff who grade operating tests. When necessary to distinguish between the two, “facility examiner” or “NRC examiner” is used.

B. General Evaluation Guidelines

S Satisfactory Working Knowledge and Understanding

The applicant may have had some minor difficulty related to system interactions. Their operation of equipment was very good, although they may have shown some hesitation while discussing or performing some tasks. Overall, the applicant seemed familiar with the equipment and procedures.

U Unsatisfactory Working Knowledge and Understanding

The applicant had difficulty answering questions in depth or related to system interactions. The applicant showed a lack of familiarity with the equipment or the procedures. The applicant’s answers were inaccurate or incomplete. The applicant displayed unfamiliarity with the subject or system, as shown by hesitant answers, inability to find information, inability to find control board indications or controls, or a lack of knowledge of procedural steps to operate systems.

Detailed notes stating the particular action or response displaying the deficiency must support all deficiencies. Sufficient knowledge deficiencies in a common area may result in an unsatisfactory evaluation for that area.

When documenting deficiencies, general statements such as “did not know primary coolant system” are inadequate. The examiner must note specific items and the significance of each deficiency to reactor safety or the health and safety of the public or reactor staff.

The examiner must document all unsatisfactory grades and all numerical grades of 1 or 2 for failed competencies by providing the following (to the extent applicable):

- the question asked by the examiner
- the incorrect answer provided by the applicant
- the knowledge or ability that the applicant lacks
- the consequences (safety significance) of the incorrect answer
- the correct answer

C. Specific Instructions for Completing Form ES-3.1-1

The examiner must use Form ES-3.1-1 (and all applicable attachments) to grade the operating test according to the following instructions. Calculations shall be written by rounding to the 0.1 percent (e.g., 78.45 percent rounds to 78.5).

1. Category A, Administrative Topics (Form ES-3.1-1, page 2)

The examiner must evaluate the applicant's performance for each administrative topic discussed or performed. All comments should be entered on Form ES-3.1-1, page 6 (or higher). The examiner will review all comments concerning a topic, make a **SAT/UNSAT** determination for the topic, and document the grade by placing an **S** or **U** in the appropriate block on ES-3.1-1, page 2. The examiner then repeats this process for each topic covered in the category. For topics not covered during the operating test, the examiner should indicate that no grade is to be assigned by placing a dash or the letters **N/E** (Not Examined) in the block; this will clearly show that the block was not missed.

After grading all applicable topics in the category, the examiner will determine the overall grade for Category A by dividing the number of satisfactory topics by the total number of topics examined. The applicant must be graded as satisfactory in at least 70 percent of the topics to receive an overall satisfactory grade. This grade is then placed in the *Category A* block in the *Operating Test Summary* section of the Form ES-3.1-1 cover page.

For example, if a candidate received two unsatisfactory grades and ten satisfactory grades, they would receive an **S** for the category based on a grade of 10/12 (or 83.3 percent).

2. Category B, Facility Walkthrough (Form ES-3.1-1, page 3)

The examiner must indicate the systems selected and the tasks conducted in the appropriate columns of Form ES-3.1-1, page 3. The examiner must then evaluate the applicant's performance for each of those systems. All comments should be entered on Form ES-3.1-1, page 6 (or higher). The examiner will review all comments on the system, make a **SAT/UNSAT** determination for the system, and document the grade by placing an **S** or **U** in the appropriate block on Form ES-3.1-1, page 3. The examiner then repeats this process for each system covered in the category.

The examiner will determine the overall category grade by calculating the ratio of systems passed to systems evaluated. To receive a grade of **Satisfactory**, the applicant must receive a satisfactory evaluation in at least 70 percent of the systems evaluated.

For example, if a candidate received one unsatisfactory system grade and seven satisfactory system grades, they would receive an **S** for the category based on a grade of 7/8 (or 87.5 percent).

3. Category C, Integrated Facility Operations (Form ES-3.1-1, pages 4 and 5)

Before grading Category C of the operating test, the examiner must enter any scenario revisions made during the test on page 6 of the applicable Form ES-3.1-1 so that the form accurately reflects the events actually tested. The final product must be a clear, legible reproduction of the actual events that occurred at the facility during the operating test. The NRC will expunge any rough notes or irrelevant comments from the final version sent to the candidate.

The examiner will grade candidate performance by using the worksheet (Form ES-3.3-1, "RO/SRO Competency Grading Guidance for Integrated Facility Operations") and then transcribing the grade onto page 4 of Form ES-3.1-1.

The worksheet contains several competencies for measuring operator performance. Each competency has several rating factors, on a scale of 1 to 3, further defining the competency.

1 The rating factors have definitions, or “behavioral anchors,” at each point along the scale. These
2 anchors aid the examiner in assigning a value based on the applicant’s actions. Each rating
3 factor is also assigned a specific weight representing the relative importance of that factor. The
4 weight factor, in conjunction with the value assigned to the rating factor by the examiner, yields
5 a numerical measure of the applicant’s performance on that rating factor. Combining all of the
6 rating factor numerical evaluations for all of the competencies yields the applicant’s overall
7 grade for Category C of the operating test.

8
9 The examiner must complete the following to evaluate the applicant’s performance on
10 Category C of the operating test:

- 11
12 a. Review and Categorize Notes. Review the notes taken while administering the operating
13 test. Label the documented actions and behaviors with the number and letter of the
14 rating factor that they most accurately reflect. Each comment that reflects negatively on
15 the candidate’s performance should be coded, whether or not it results in a grade of 1
16 or 2 for that rating factor.
- 17
18 b. Evaluate the Candidate on the Rating Factors. After categorizing the applicant’s actions
19 and behaviors, evaluate the applicant’s performance by completing page 4 of
20 Form ES-3.1-1. Form ES-3.3-1 gives the examiner guidance for evaluating each rating
21 factor. For each rating factor, circle the integral rating value corresponding to the rating
22 value (1–3) that most accurately reflects the applicant’s performance. (As discussed in
23 ES 3.1, *Control Board Operations* is optional for SRO-U applicants.)
- 24
25 c. Document Low Ratings. All ratings of 1 must be justified by documenting the specific
26 actions or behaviors that warranted the evaluation and their consequences. Additionally,
27 ratings of 2 must be documented for any competency that contributes to a candidate
28 failing Category C of the operating test. Provide this documentation directly on page 6 of
29 Form ES-3.1-1.
- 30
31 d. Compute Competency Grades. For each competency, sum the rating grades on page 5
32 of Form ES-3.1-1 to compute a final competency grade. (Final competency grades will
33 range from 1 to 3.) Record the final competency grades in the *Total* blocks on the form.
- 34
35 e. Compute Overall Competency Rating. If the applicant receives a score of greater
36 than 1.8 in all of the competencies examined, then the examiner will enter an overall
37 grade of Satisfactory (SAT or S) in the Category C block on the cover page of Form
38 ES-3.1-1. (NOTE: For an SRO-U applicant, if Competence 5, *Control Board Operations*,
39 is evaluated, it should be factored into the applicant’s overall grade.)

40
41 The NRC examiner overseeing a facility licensee’s administration of an operating test will also
42 observe each operating test. During the observation, the NRC examiner will take notes on the
43 applicant’s performance that are sufficient to verify the adequacy of the facility examiner’s
44 grading of the applicants.

4. Operating Test Comments (Form ES-3.1-1, page 6)

The examiner must document all weaknesses identified during the operating test on page 6 of Form ES-3.1-1. The examiner will enter the specific subject (e.g., A.3.c, B.1.3.C, etc.) on the left side of the form and the specific comment to the right. The page numbers in the *Comment Page* blocks are used to cross reference comments between the form and the attachments.

Comments from Category A should be documented first and in sequence as listed on Form ES-3.1-1, page 2. Then comments from Category B should be documented and in sequence as listed on Form ES-3.1-1, page 3. Finally, comments from Category C should be documented beginning with comments from C.1, then C.2, etc. Also, comments for Category C should include information about the scenario event in which the comment originated. The examiner shall use Form ES-3.3-1 in determination of deficiency competency. The applicant's Category C deficiencies should not be marked against more than one competency, and that competency should be the key anchor for that deficiency.

Documentation of comments for Categories A, B, and C should be provided in the following format: (1) the candidate's statements or actions in response to questions or scenarios; (2) the candidate's expected responses or actions based on referenced documentation; (3) the references used by the examiner to obtain the correct answers or actions; and (4) a conclusion or summary statement that explains why the candidate's responses or actions led to the grading assigned for that category item (i.e., satisfactory or unsatisfactory).

Example Comment Outline for Category A or B

The candidate was asked [insert question here]. The candidate [correctly/incorrectly/partially correctly] stated [insert candidate's response to the question]. The candidate was expected to provide a response that demonstrated knowledge of [question subject] consistent with the following information from Ref(s). [number(s)]: [insert details associated with an expected answer based on the reference material].

Reference(s): (1) [insert reference here]
(2) [insert reference here]

The candidate was able to correctly answer the remaining questions in this topic and is therefore rated SATISFACTORY in this topic.

Or

The candidate's inadequate knowledge of [question subject] could adversely impact their ability to [insert safety or security basis for giving an unsatisfactory grade] and is therefore rated UNSATISFACTORY in this topic.

Example Comment Outline for Category C

In event [insert event number] of scenario [insert scenario number] of the operating test, the candidate was asked to [insert scenario topic here]. [Insert a summary of all of the candidate's actions that support the grading assigned for this rating factor]. The candidate was expected to [response/perform the following actions] consistent with the following information from Ref(s). [number(s)]: [insert details associated with expected response/actions based on the reference material].

Reference(s): (1) [insert reference here]
(2) [insert reference here]

1 The candidate's inability to [insert identified operational deficiency] demonstrated [insert
2 how the inability is related to the competency category of the rating factor] resulting in a
3 rating factor of [insert rating factor] in the competency category and an overall [insert the
4 overall grading for the topic] in this topic.
5

6 Any figures, drawings, flowcharts, forms, or the like that the applicant used during the operating
7 test may be used in documenting their performance. This material should be appropriately
8 marked and cross-referenced to applicable comments on Form ES-3.1-1 and attached to the
9 examination package for retention.
10

11 **5. Cover/Summary Page**

12
13 The cover page of Form ES-3.1-1 summarizes all of the pertinent information about the
14 applicant, the facility, and the operating test.
15

16 The examiner will fill in the applicant's name, docket number, the facility for which the license is
17 sought, the type of operating test, and the facility description.
18

19 Next the examiner will enter the name of the examiner who administered the operating test and
20 the date on which it was given. The grading summary blocks must be completed according to
21 the instructions in this standard by the examiner who administered the operating test. For
22 facility-administered operating tests, the facility licensee will next forward the Form ES-3.1-1 to
23 the CE.
24

25 The NRC examiner who administered the operating test or who observed the facility-
26 administered operating test will enter their pass, fail, or waive recommendation in the
27 appropriate block. The NRC examiner may make a pass recommendation only if **all** summary
28 blocks of the operating test contain **SAT (S)** grades or **N/E**. The examiner will then sign as the
29 test administrator.
30

31 Once completed, the entire examination package is given to a peer reviewer. All peer reviewer
32 comments shall be resolved before the CE makes a final recommendation.
33

34 **D. Attachments/Forms**

35
36 Form ES-3.3-1, "RO/SRO Competency Grading Guidance for Integrated Facility Operations"

RO/SRO Competency Grading Guidance for Integrated Facility Operations

1. IDENTIFICATION OF CUES, ALARMS, ANNUNCIATORS, AND TRENDS

This competency involves the ability to *recognize and acknowledge* cues, alarms, annunciators, and trends. It includes the ability to prioritize one's attention in keeping with the importance/severity of facility status information and the ability to *correctly interpret and verify* that signals are *consistent with facility/system conditions* (with the use of alarm response procedures, as appropriate). The competency deals strictly with the understanding and interpretation of annunciators and alarm signals and therefore does not include knowledge of, or the ability to diagnose, overall facility/system status based on other indications of facility/system status or condition(s).

DID THE CANDIDATE:

(A) RECOGNIZE and ACKNOWLEDGE cues, alarms, annunciators, and trends?

3	2	1
Consistent and timely recognition/acknowledgment	Some lapses in awareness	Failed to recognize/acknowledge cues, alarms, annunciators, or trends

(B) Correctly INTERPRET and VERIFY that information is consistent with facility/system conditions (including the use, when necessary, of the alarm response procedures (ARP)?

3	2	1
Consistently and effectively	Some inaccuracies in interpretation/verification of signals	Inaccuracies resulting in facility degradation; poor use of ARPs

(C) ATTEND to ANNUNCIATOR/ALARM SIGNALS, CUES, and TRENDS in order of importance/severity?

3	2	1
Yes, in all cases	Some inaccuracies/oversights	Did not prioritize attention to facility status information; inattentive to important alarms

2. DIAGNOSIS OF AND RESPONSE TO CONDITIONS

This competency involves the ability to *diagnose* facility conditions and to recognize and *report* these to mitigate out-of-spec conditions. Included is the *knowledge* of the impact of continued operation under out-of-spec conditions and the *knowledge* of the effects of mitigating actions. This competency also includes correctly reporting these conditions to the appropriate individuals, departments, or agencies.

DID THE CANDIDATE:

(A) Correctly DIAGNOSE facility conditions based on control room indications?

3	2	1
Diagnoses were accurate	Some errors/difficulties in diagnoses	Faulty diagnoses adversely impacted facility status

(B) Correctly REPORT conditions out of specification, diagnoses of conditions, and continuing status?

3	2	1
Accurate and timely reports provided	Some lapses in making reports	Delayed or faulty reports adversely impacted mitigation or emergency response

(C) Demonstrate an understanding of the EFFECTS of continued operation and responsive actions and how they AFFECTED FACILITY/SYSTEM CONDITIONS?

3	2	1
Understood the effects of continued operation and responsive actions	Some misunderstandings with no significant impact	Inadequate knowledge of effects resulted in facility degradation

RO/SRO Competency Grading Guidance for Integrated Facility Operations

3. COMPLIANCE/USE OF PROCEDURES AND TECHNICAL SPECIFICATIONS

This competency involves the ability to *refer to* and *comply with* normal, abnormal, emergency, and administrative *procedures* in a timely manner (i.e., in sufficient time to avoid adverse impacts on facility status). Included is the ability to *recognize* procedure entry *conditions* and *carry out required actions correctly* and to *recognize* and *comply with* required LCO/action statements.

DID THE CANDIDATE:

(A) RECOGNIZE entry condition requirements for normal, abnormal, emergency procedures, and technical specifications?

3	2	1
Consistent and timely recognition/ acknowledgment of conditions requiring procedure-driven actions	Some difficulties/oversights in understanding procedure entry conditions	Significant errors in important instances resulted in missed requirements or facility degradation

(B) COMPLY WITH procedures (including precautions and limitations) in an accurate, timely manner?

3	2	1
Accurate and timely compliance	Few errors; corrections made in sufficient time to avoid adverse impact	Many significant errors; required excessive assistance

(C) REFER to the appropriate procedure/technical specification in a timely manner?

3	2	1
Quickly located appropriate procedures/technical specifications.	Some difficulties/oversights in referring to appropriate procedures	Problems/failures in referring to appropriate procedure(s) in important instances

4. CONTROL BOARD BASICS

This competency involves the ability to *locate* and *manipulate controls* to attain a desired facility/system response/condition. Included is the ability to take *manual control* of automatic functions, when appropriate.

DID THE CANDIDATE:

(A) LOCATE/MANIPULATE CONTROLS effectively and accurately?

3	2	1
Went directly to appropriate controls and manipulated them accurately in a timely manner	Some hesitancy/difficulty in locating or manipulating controls but effectively mitigated any resulting consequences	Demonstrated inability to locate controls without assistance or major system perturbation(s) resulting from improper manipulations

(B) Demonstrate an understanding of how his or her ACTIONS (or inaction) AFFECT REACTOR and SYSTEM CONDITIONS?

3	2	1
Understood the effect of actions on reactor and systems	Some misunderstanding of effect of actions on reactor and systems	Appeared to act without knowledge of or regard for effect on reactor and systems

(C) Take MANUAL CONTROL of automatic functions when appropriate?

3	2	1
Took manual control as appropriate	Some delays; some as appropriate before overriding automatic functions	Depended on automatic actions; required prompting to take manual control

4.0 WRITTEN EXAMINATIONS

4.1 PREPARATION OF WRITTEN EXAMINATIONS

A. Purpose

This standard specifies the requirements, procedures, and guidelines for the preparation of written examinations for the licensing of RO and SRO applicants at non-power reactors.

The term “examiner” as used in this standard refers to either facility-licensee staff who prepare written examinations (for facility-prepared examinations) or NRC staff who prepare written examinations (for NRC-prepared examinations). When necessary to distinguish between the two, “facility examiner” or “NRC examiner” is used.

B. Background

The required content of written examinations is presented in 10 CFR 55.41 for ROs and 10 CFR 55.43 for SROs. Each written examination will include a representative selection of questions on the K/As needed to perform licensed operator duties. The written examination is administered in three categories, as described in Section D of this standard.

C. Examination Preparation

Examiners will prepare written examinations according to the guidelines and instructions summarized below.

1. General Guidelines

- a. Prepare the written examination so that an applicant capable of safely operating the facility can complete and review the examination within the time allotted, achieving a grade of at least 70 percent in each category. When creating the examination, estimate 2 minutes per response.
- b. Avoid excessive duplication of questions. Do not repeat more than 25 percent of the questions from the last written examination administered at the facility.
- c. All questions will be in multiple choice (preferred) or matching format. Do not use true/false questions. Matching questions must have only one correct answer and are limited to a total value of 2 points per question. All multiple-choice questions will have four choices with one correct answer.
- d. It is desirable to develop questions that hypothesize events or circumstances leading to events, thereby examining the applicants’ analytical abilities and knowledge of corrective actions.
- e. Questions should contain a representative sample from among the following 21 items, to the extent applicable to the facility and the examination level (the first 14 items apply to both ROs and SROs and the last 7 items apply to only SROs):
 - (1) fundamentals of reactor theory, including fission process, neutron multiplication, source effects, control rod effects, criticality indications, reactivity coefficients, and poison effects

- (2) general design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow
- (3) mechanical components and design features of the reactor primary system
- (4) secondary coolant and auxiliary systems that affect the facility
- (5) facility operating characteristics during steady-state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations, and reasons for these operating characteristics
- (6) design, components, and functions of reactivity control mechanisms and instrumentation
- (7) design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features
- (8) components, capacity, and functions of emergency systems
- (9) shielding, isolation, and containment design features, including access limitations
- (10) administrative, normal, abnormal, and emergency operating procedures for the facility
- (11) purpose and operation of radiation monitoring systems, including alarms and survey equipment
- (12) radiological safety principles and procedures
- (13) procedures and equipment available for handling and disposal of radioactive materials and effluents
- (14) principles of heat transfer thermodynamics and fluid mechanics
- (15) conditions and limitations in the facility license
- (16) facility operating limitations in the technical specifications and their bases
- (17) facility licensee procedures required to obtain authority for design and operating changes in the facility
- (18) radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions
- (19) assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations

- 1 (20) procedures and limitations involved in initial core loading, alterations in core
2 configuration, control rod programming, and determination of various internal and
3 external effects on core reactivity
4
5 (21) fuel-handling facilities and procedures
6

7 **2. Use of Reference Material**

8
9 The examiner is expected to use the following reference materials when preparing the written
10 examination:

- 11
12 a. Facility reference material (e.g., provided per ES 2.1), especially facility learning
13 objectives used in the applicants' training program, if available.
14
15 b. NRC questions previously used at the facility or at similar facilities, as applicable.
16
17 c. Licensee event reports, safety evaluation reports, information notices, current industry
18 and facility problems, and facility question banks. Questions drawn from the facility's
19 bank will not exceed 10 percent of the questions in that bank.
20
21 d. The examiner may use reference material (i.e., diagrams, sketches, portions of facility
22 procedures) as attachments to the written examination and ask applicants to identify
23 components and other items on the attachments. The examiner will ensure that any
24 reference material used in the examination is easy to read, clearly marked, and provides
25 an effective and objective way for the applicant to display knowledge. The examiner
26 must also take care that the reference material does not give away the answers to any
27 other questions.
28

29 **3. Examination Assembly**

30
31 The examiner will produce several copies of the written examination, along with a cover sheet
32 stating whether the examination has an answer sheet (master copy and facility licensee review
33 copies) or not (applicant copies). In addition, the examiner will produce several copies of an
34 examination handout similar to Form ES-4.1-1, "Written Examination Cover Sheet," attached to
35 this standard. This handout will contain a cover sheet for the applicant to sign; a copy of the
36 "NRC Rules for Written Examination Administration"; an equation sheet; answer sheets; and
37 any tables, drawings, or graph paper necessary to support the examination. The applicant must
38 sign the cover sheet and submit the handout before leaving the examination area.
39

40 **D. Examination Structure**

41
42 There are minimal differences between the K/As required of RO applicants and of SRO
43 applicants that can be tested in a written examination format. Therefore, only one examination is
44 needed for both RO and SRO-I applicants. Because SRO-U candidates have already passed an
45 RO-level written examination, they are not required to take another written examination.
46 Differences in the K/As required of an SRO applicant versus an RO applicant are better
47 evaluated on the operating test (as described in ES 3.1). Modifying an SRO-I written
48 examination to include questions that relate directly to SRO duties and responsibilities is
49 permissible, but the operating test serves as a more suitable forum for evaluating such topics.
50

51 Because non-power reactors vary widely in complexity, the structure of the written examination
52 will be based on the three types identified in ES 3.1, i.e., Complex, Moderate, or Simple.

Attachment 2 to ES 3.1 lists non-power reactors by type as of the date of issuance of this NUREG.

The written examination will contain the following three categories:

Category A Reactor Theory, Thermodynamics, and Facility Operating Characteristics

Category B Normal and Emergency Operating Procedures and Radiological Controls

Category C Facility and Radiation Monitoring Systems

The minimum number of questions contained in each of these categories depends on the facility type.

Complex non-power reactor written examinations should have a minimum of 20 questions per category. Moderate non-power reactor written examinations should have a minimum of 15 questions per category. Simple non-power reactor written examinations should have a minimum of 10 questions per category.

The written examination will be divided into the three categories identified and described below.

Category A—This category contains questions related to basic nuclear theory, reactor behavior, and processes that take place in a reactor. Thermodynamics should be limited only to those areas that are applicable to the facility's operations and should be related to pertinent heat transfer and fluid flow processes that are observable at the facility. Questions should also relate to the manner in which power, reactivity, rod worth, and other parameters of the facility change in response to rod manipulation, core burnup, heatup, experiment insertion, or other activities associated with the operation of the facility. Questions on facility behavior as seen on recorder traces because of these activities should be included.

Category B—This category contains questions on the procedures for operation of the reactor and auxiliary systems, including administrative controls pertinent to the RO position. Candidates must display complete understanding of the immediate action steps and the bases associated with abnormal and emergency operating procedures. Familiarity and understanding of technical specifications and operating, surveillance, and maintenance procedures to the extent applicable to the RO position should also be evaluated. This category will also include questions on radiation hazards, radiological safety practices, and facility and Federal requirements (e.g., 10 CFR Part 20, "Standards for Protection against Radiation") for the identification and control of radiation hazards and radioactive material handling and releases.

Category C—This category contains questions on the design, construction, operation, and interrelationships of the systems most directly associated with reactor safety, such as rod control, emergency power, or core flooding. Questions on the characteristics, operation, and interrelationships of nuclear and process instrumentation and control systems are also to be included, with an emphasis on safety-related devices. Investigating candidate knowledge of auxiliary systems and instrumentation is allowable, but the bulk of the questions will be associated with areas important to safety. This category shall also include questions associated with radiation monitoring systems and detectors, including both fixed and portable equipment. These questions will evaluate the candidate's knowledge of the operating characteristics, limitations, and applications of the equipment as appropriate to the facility.

The goal for the relative weight of each category in the written examination should be approximately 33 percent of the total examination worth. However, since the relative importance

of safety and emergency systems varies significantly from one size and type of non-power reactor to another and since 10 CFR 55.41 and 10 CFR 55.43 allow flexibility in the selection of questions “to the extent applicable to the facility,” examiners experienced in the operation and examination activities associated with non-power reactors can modify the weighting of the examination categories based on their professional judgment. In any case, the relative weight of any one category should be no less than 20 percent and no more than 40 percent of the total examination worth.

E. Quality Assurance Reviews

After preparing the written examination, the author should independently review each examination question for content and wording. The author should place themselves in the position of the applicant by attempting to answer the questions without using reference material or the answer key. In addition, the author should ensure that the conditions and requirements posed in the question are complete and unambiguous and that all necessary information is provided, all unnecessary information is deleted, and that the intended answer clearly follows from what is asked in the question.

For NRC-prepared examinations, if time and resources permit, another NRC examiner should independently review the written examination using the guidance above. A second reviewer is especially important for examiners in training, newly certified examiners, and examination authors who are not the CE. For facility-prepared examinations, facility licensees are encouraged to complete an independent review of the written examination prior to submitting it for CE review.

All reviewers should review the written examination using Form ES-4.1-3 attached to this standard. Facility licensees should submit the Form ES-4.1-3 with the “author” portions completed and signed with the facility-prepared written examination to the CE.

If the review of the written examination identifies major changes in structure or content (e.g., distractor or question replacements), the comments should be returned to the author for correction. The corrected examination should then be returned to the independent reviewer (for NRC-prepared examinations) or the CE (for facility-prepared examinations) for a final quality check.

After the necessary changes have been made, the CE will review the final version of the written examination for completeness and clarity.

F. Attachments/Forms

Form ES-4.1-1, “Written Examination Cover Sheet”
Attachment 1, “NRC Rules for Written Examination Administration”
Attachment 2, “Equation Sheet”
Form ES-4.1-2, “Answer Sheets”
Form ES-4.1-3, “Written Examination Quality Assurance Checkoff Sheet”

Form ES-4.1-1
WRITTEN EXAMINATION COVER SHEET

U.S. NUCLEAR REGULATORY COMMISSION
RESEARCH AND TEST REACTOR LICENSE EXAMINATION

FACILITY: _____

REACTOR TYPE: _____

DATE ADMINISTERED: _____

CANDIDATE: _____

INSTRUCTIONS TO CANDIDATE:

Answers are to be written on the answer sheets provided. Attach all answer sheets to the examination. Point values are indicated in parentheses for each question. A 70 percent or greater overall and in each category is required to pass the examination. Examinations will be collected 3 hours after they start.

CATEGORY VALUE	% OF TOTAL	CANDIDATE'S SCORE	% OF CATEGORY VALUE	CATEGORY
20.00	33.3	_____	_____	A. REACTOR THEORY, THERMODYNAMICS, AND FACILITY OPERATING CHARACTERISTICS
20.00	33.3	_____	_____	B. NORMAL AND EMERGENCY OPERATING PROCEDURES AND RADIOLOGICAL CONTROLS
20.00	33.3	_____	_____	C. FACILITY AND RADIATION MONITORING SYSTEMS
60.00		_____	_____%	TOTALS
FINAL GRADE				

All work done on this examination is my own. I have neither given nor received aid.

Candidate's Signature

ATTACHMENT 1
NRC RULES FOR WRITTEN EXAMINATION ADMINISTRATION

1. Cheating on the examination means an automatic denial of your application and could result in more severe penalties.
2. When you have completed your examination, you must sign the statement at the bottom of the cover sheet in front of the examiner or NRC-authorized proctor. This indicates that the work is your own and that you have not received or given assistance in completing the examination.
3. Only restroom trips are allowed and are limited to only one applicant at a time. You must avoid all contact with anyone or any materials outside the examination room to preclude even the appearance of cheating. No conversation with other individuals or other stops are allowed.
4. Use black ink or dark pencil only to facilitate legible reproductions.
5. Print your name in the blank provided in the upper right corner of the examination cover sheet and each answer sheet.
6. Mark your answers on the answer sheet(s) provided. The answer sheet(s) contain places to circle the correct answer or to fill in the correct answer and a blank space to put your final answer if you have changed your choice.
7. The point value for each question is shown in brackets after the question.
8. If the intent of a question is unclear, ask questions of the examiner or NRC-authorized proctor only.
9. There is a time limit of 3 hours for the written examination.
10. You must achieve a grade of 70 percent or greater overall and in each category to pass the examination.
11. When turning in your examination, assemble the completed examination with examination questions, examination aids, answer sheet(s), and all scrap paper. Give the examiner or NRC-authorized proctor your answer sheet(s) along with the signed cover sheet. Take all other material collected with you out of the examination area.
12. After turning in your written examination, leave the examination area. If you are observed in this area while the examination is still in progress, your license may be denied or revoked.

ATTACHMENT 2 EQUATION SHEET

$$\dot{Q} = \dot{m} c_p \Delta T = \dot{m} \Delta H = UA \Delta T$$

$$P_{\max} = \frac{(\rho - \beta)^2}{2\alpha(k)\ell}$$

$$\ell^* = 1 \times 10^{-4} \text{ seconds}$$

$$\lambda_{\text{eff}} = 0.1 \text{ seconds}^{-1}$$

$$SCR = \frac{S}{-\rho} \approx \frac{S}{1 - K_{\text{eff}}}$$

$$CR_1(1 - K_{\text{eff}_1}) = CR_2(1 - K_{\text{eff}_2})$$

$$CR_1(-\rho_1) = CR_2(-\rho_2)$$

$$SUR = 26.06 \left[\frac{\lambda_{\text{eff}} \rho}{\beta - \rho} \right]$$

$$M = \frac{1 - K_{\text{eff}_0}}{1 - K_{\text{eff}_1}}$$

$$M = \frac{1}{1 - K_{\text{eff}}} = \frac{CR_1}{CR_2}$$

$$P = P_0 10^{SUR(t)}$$

$$P = P_0 e^{\frac{t}{T}}$$

$$P = \frac{\beta(1 - \rho)}{\beta - \rho} P_0$$

$$SDM = \frac{(1 - K_{\text{eff}})}{K_{\text{eff}}}$$

$$T = \frac{\ell^*}{\rho - \beta}$$

$$T = \frac{\ell^*}{\rho} + \left[\frac{\beta - \rho}{\lambda_{\text{eff}} \rho} \right]$$

$$\Delta\rho = \frac{K_{\text{eff}_2} - K_{\text{eff}_1}}{k_{\text{eff}_1} \times K_{\text{eff}_2}}$$

$$T_{\frac{1}{2}} = \frac{0.693}{\lambda}$$

$$\rho = \frac{(K_{\text{eff}} - 1)}{K_{\text{eff}}}$$

$$DR = DR_0 e^{-\lambda t}$$

$$DR = \frac{6\text{CiE}(n)}{R^2}$$

$$DR_1 d_1^2 = DR_2 d_2^2$$

$$\frac{(\rho_2 - \beta)^2}{\text{Peak}_2} = \frac{(\rho_1 - \beta)^2}{\text{Peak}_1}$$

DR - Rem; Ci - curies; E - Mev; R - feet

$$1 \text{ curie} = 3.7 \times 10^{10} \text{ dis/sec}$$

$$1 \text{ kg} = 2.21 \text{ lbm}$$

$$1 \text{ horsepower} = 2.54 \times 10^3 \text{ BTU/hr}$$

$$1 \text{ Mw} = 3.41 \times 10^6 \text{ BTU/hr}$$

$$1 \text{ BTU} = 778 \text{ ft-lbf}$$

$$^{\circ}\text{F} = 9/5 \text{ }^{\circ}\text{C} + 32$$

$$1 \text{ gal (H}_2\text{O)} \approx 8 \text{ lbm}$$

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$$

$$c_p = 1.0 \text{ BTU/hr/lbm/}^{\circ}\text{F}$$

$$c_p = 1 \text{ cal/sec/gm/}^{\circ}\text{C}$$

Form ES-4.1-2
ANSWER SHEETS

Category A: Reactor Theory, Thermodynamics, and Facility Operating Characteristics

A.1a α β γ n ____

A.7 a b c d ____

A.1b α β γ n ____

A.8 a b c d ____

A.1c α β γ n ____

A.9 a b c d ____

A.1d α β γ n ____

A.10 a b c d ____

A.2 a b c d ____

A.11 a b c d ____

A.3a 1 2 3 4 5 6 7 ____

A.12 a b c d ____

A.3b 1 2 3 4 5 6 7 ____

A.13 a b c d ____

A.3c 1 2 3 4 5 6 7 ____

A.14 a b c d ____

A.3d 1 2 3 4 5 6 7 ____

A.15 a b c d ____

A.4 a b c d ____

A.16 a b c d ____

A.5 a b c d ____

A.17 a b c d ____

A.6 a b c d ____

A.18 a b c d ____

Form ES-4.1-2 (Continued)
ANSWER SHEETS

Category B: Normal and Emergency Operating Procedures and Radiological Controls

B.1	a b c d ____	B.9c	NR Double NA ____
B.2a	1 2 3 4 5 6 7 8 9 ____	B.9d	NR Double NA ____
B.2b	1 2 3 4 5 6 7 8 9 ____	B.10a	Water Air Structural Fission ____
B.2c	1 2 3 4 5 6 7 8 9 ____	B.10b	Water Air Structural Fission ____
B.2d	1 2 3 4 5 6 7 8 9 ____	B.10c	Water Air Structural Fission ____
B.2e	1 2 3 4 5 6 7 8 9 ____	B.10d	Water Air Structural Fission ____
B.3	a b c d ____	B.11	a b c d ____
B.4	a b c d ____	B.12	a b c d ____
B.5	a b c d ____	B.13	a b c d ____
B.6	a b c d ____	B.14a	____ days
B.7	a b c d ____	B.14b	____ weeks
B.8a	SL LSSS LCO ____	B.14c	____ months
B.8b	SL LSSS LCO ____	B.14d	____ months
B.8c	SL LSSS LCO ____	B.15	a b c d ____
B.8d	SL LSSS LCO ____	B.16	a b c d ____
B.9a	NR Double NA ____	B.17	a b c d ____
B.9b	NR Double NA ____		

Form ES-4.1-2 (Continued)
ANSWER SHEETS

Category C: Facility and Radiation Monitoring Systems

- | | | | | | |
|-------|-----------------------|-----|-------|-----------------------|-----|
| C.1 | a b c d | ___ | C.10e | Open Closed Throttled | ___ |
| C.2 | a b c d | ___ | C.10f | Open Closed Throttled | ___ |
| C.3 | a b c d | ___ | C.11a | Open Shut On Off | ___ |
| C.4 | a b c d | ___ | C.11b | Open Shut On Off | ___ |
| C.5 | a b c d | ___ | C.11c | Open Shut On Off | ___ |
| C.6 | a b c d | ___ | C.11d | Open Shut On Off | ___ |
| C.7 | a b c d | ___ | C.11e | Open Shut On Off | ___ |
| C.8 | a b c d | ___ | C.11f | Open Shut On Off | ___ |
| C.9a | 1 2 3 4 | ___ | C.11g | Open Shut On Off | ___ |
| C.9b | 1 2 3 4 | ___ | C.11h | Open Shut On Off | ___ |
| C.9c | 1 2 3 4 | ___ | C.12 | a b c d | ___ |
| C.9d | 1 2 3 4 | ___ | C.13 | a b c d | ___ |
| C.10a | Open Closed Throttled | ___ | C.14 | a b c d | ___ |
| C.10b | Open Closed Throttled | ___ | C.15 | a b c d | ___ |
| C.10c | Open Closed Throttled | ___ | C.16 | a b c d | ___ |
| C.10d | Open Closed Throttled | ___ | C.17 | a b c d | ___ |

WRITTEN EXAMINATION QUALITY ASSURANCE CHECKOFF SHEET

Examination Package No. 50-[xxx]/OL-YY-[xx], Facility Name, Month Year

Author: [Name]	Date of Examination: [Date]	
	Author (Check)	Peer/CE/BC Review (Check)
Objectivity and clarity of questions. Answers clear and concise on answer key.		
Questions and answers technically accurate and applicable to facility.		
Proper level of knowledge (RO).		
No questions that are similar and could cause failure based on one point of lack of knowledge.		
10 CFR 55.41 (RO) sampling is appropriate.		
No question worth more than 2 points.		
Total point value correct for facility type (Simple, Moderate, or Complex)		
ES 4.1.C.1 Examination question format criteria met. (Less than or equal to 25 percent overlap of questions from last examination. No true/false questions. All multiple-choice questions have four choices with one correct answer. Matching and completion questions have only one correct answer and are limited to 2 points.)		
Author Review:	Date: MM/DD/YYYY	
Peer/CE Review	Date: MM/DD/YYYY	

4.2 ADMINISTRATION OF WRITTEN EXAMINATIONS

A. Purpose

This standard specifies the requirements and procedures for administering the written examination at a non-power reactor.

The term “examiner” as used in this standard refers to either facility-licensee staff who administer written examinations or NRC staff who administer written examinations. When necessary to distinguish between the two, “facility examiner” or “NRC examiner” is used.

B. Written Examination Facilities

- (1) The facility licensee is responsible for providing a room that is suitable for administering the written examination. The examination room should have nearby restroom facilities to enable the examiner or proctor to maintain the security of the written examination. Enclosure 2 in the confirmation letter (refer to Attachment 1 to ES 2.1) lists the NRC’s policies regarding the written examination facility and other preparations for administering the written examination.
- (2) The CE will evaluate the examination room for adequacy. The applicants should not have access to any reference material that is not approved by the CE. The examination will not begin until the CE is satisfied with the room where the examination is going to be given.

C. Proctoring the Written Examination

- (1) The CE (for NRC-administered examinations) or the facility licensee proctor (for facility-administered examinations) will ensure that the written examination is proctored at all times. For large numbers of applicants, the CE or facility licensee proctor may determine that they need assistance proctoring the examination. If proctors are needed, the CE should request assistance from other examiners or other responsible NRC employees, or the facility licensee proctor should request assistance from other responsible facility licensee staff.

The CE (for NRC-administered examinations) or the facility licensee proctor (for facility-administered examinations) will brief all proctors on their responsibilities before the written examinations are distributed. Proctors shall not engage in any activities that may divert their attention from the applicants and possibly cause the examination to be compromised.

- (2) When an applicant asks for clarification of a question on the written examination, the proctor should write down the applicant’s question, and in a case where the proctor is not an examiner, present the question to an examiner or the CE for resolution. When an examiner is not sure how to respond to a question without giving away the answer, the examiner will refer the question to the CE. If there is no way to clarify a question without giving away the answer, the proctor will so inform the applicant.

The proctor(s) will document all questions regarding specific written examination test items on the master copy of the examination. The CE will use the comments for future reference in resolving facility licensee comments and grading conflicts.

1 When responding to questions, the proctor should be alert for indications that an
2 applicant is unfamiliar with the terminology used in the written examination. The proctor
3 will ask the CE to determine the correct terminology and announce it to all the applicants
4 taking the examination.

5
6 All question changes or clarifications will be called to the attention of all applicants.
7 Changes made to questions during the examination should be made on the master copy
8 and on the copy provided to the facility licensee staff.

9
10 For facility-administered written examinations, an NRC point of contact must be available
11 to respond to facility licensee questions while the examinations are being given. For
12 NRC-prepared examinations, either the CE or another NRC examiner familiar with the
13 examination content must be available to respond to the applicants' questions remotely
14 (e.g., via telephone).

15 16 **D. Written Examination Administration Procedure**

17
18 The proctor or CE will ensure that the written examination is administered as follows:

- 19
20 (1) Verify each applicant's identity against the examination assignment sheet (see
21 Attachment 2, ES 2.1). Any errors or absences will be resolved with the facility licensee
22 staff, and the assignment sheet will be updated as required.

23
24 The CE will ask the facility licensee to withdraw the application of any individual not
25 taking the examination. This withdrawal will be formalized by the facility licensee sending
26 a letter to the CE who will forward it to the OLA for inclusion in the applicant's docket file.

- 27
28 (2) The CE will inspect the examination room and either approve, have removed, or have
29 covered any reference material, prior to the administration of the written examination.

- 30
31 (3) A proctor will do the following:

- 32
33 a. Inform the applicants that they may use calculators to complete the examination.
34 Define the examination room for the applicants.
35
36 b. Pass out the examinations, answer sheets, and handouts and instruct the
37 applicants not to review the examination until told to do so.
38
39 c. Brief the applicants on the rules and guidelines that will be in effect during the
40 examination by directing them to follow along with the instructions directly
41 beneath the examination cover sheet. Read the first two rules **verbatim**.
42
43 d. Ask the applicants to verify the completeness of their examination by checking
44 each page.
45
46 e. After answering any questions that the applicants may have regarding
47 examination rules, start the examination and record the start time.
48
49 f. Periodically advise the applicants of the examination time remaining.

- 1 g. Ensure that each applicant signs the cover sheet when turning in their
2 examination, and ensure that all answer sheets are included.
3
4 h. Remind the applicants to leave the examination area.
5
6 (3) When all of the written examinations are completed, the CE may conduct an
7 examination review with the facility licensee staff as described in Section E of this
8 standard.
9

10 **E. Facility Licensee Staff Review of the Written Examination**
11

12 After the last applicant completes the written examination, the CE will meet (onsite or virtually)
13 with all proctors and ensure that the master copy of the examination is updated with all of the
14 changes made to the questions and answers while the examination was being administered.
15

16 The CE will provide a copy of the master examination to the facility licensee staff and answer
17 any questions that the staff may have about the NRC's examination review and comment
18 process. ES 2.1, Attachment 1, Enclosure 4, provides detailed guidelines and instructions for
19 this review process.

4.3 GRADING WRITTEN EXAMINATIONS

A. Purpose

This standard describes the requirements and procedures for resolving the facility licensee's comments on the written examination, grading the examination, and conducting a quality assurance review of the graded examination.

The facility licensee may grade the written examination using the instructions in Section C. A facility licensee manager or supervisor must confirm the quality of the grading and inform the NRC that he or she concurs with the individual and collective examination results, including the justification for any grading comments or proposed examination changes submitted to the CE. The CE will perform an independent review of the facility licensee's grading. The NRC may also opt to grade the examinations. The NRC also reviews any subsequent examination changes.

B. Resolving Facility Licensee Comments

- (1) The NRC examiner grading the written examination or performing an independent review of the facility licensee's grading will analyze each facility licensee comment and document the reason that the question was changed or the reason that the comment was not accepted.
- (2) If there are two correct answers to a multiple-choice question, both answers will be accepted as correct. However, if three or more answers could be considered correct, the question will be deleted from the examination.
- (3) If 10 percent or more of the questions are deleted as a result of facility licensee comments, the examination must be evaluated to ensure that the proper ratios between categories are still satisfied. If deleting questions affects the content validity of the examination, the examination shall be withdrawn and a new examination administered.
- (4) The NRC examiner grading the written examination or performing an independent review of the facility licensee's grading must incorporate into the master examination and into the answer key all changes in response to the facility licensee's comments and any corrections made while the examination was being administered.

C. Grading the Written Examination

- (1) The written examination will not be graded until the facility licensee's comments have been resolved.
- (2) Normally, the NRC examiner who wrote an NRC-prepared written examination will grade it or perform the independent review of the facility licensee's grading. However, if the author is unavailable, the number of applicants is unusually large, or the CE wishes to expedite the process, the CE may have another examiner or multiple examiners perform this task.
- (3) If the facility licensee is grading the written examination, then the grader should make two copies of the applicant's answer sheet (save one on site in the event that the original is lost and give the other to the NRC) or, if submitting electronically to the NRC, scan the original answer sheet before grading. Ensure that the marks on any machine-graded answer sheets are legible to support copying or scanning. Perform the grading on the

original answer sheet. The grader will indicate in red pen or pencil the number of points given to or deducted for each answer on the applicant's answer sheet.

- (4) If changing a grade is necessary, the grader or reviewer will do so by lining out the original grade so that it remains legible, briefly documenting the reason for the change on the applicant's answer sheet, and initialing the change. The grader or reviewer shall not use Wite-Out™ or other methods that obscure the change.
- (5) After all the questions are graded, the grader will enter the test value, applicant's score, and applicant's grade in the *Results* section of the applicant's written examination cover sheet.
- (6) After grading the last applicant, the grader will review all of the answer sheets to ensure that all applicants were graded consistently. If the facility licensee conducted the grading, then the facility licensee will then forward the written examination package, including the master written examination and answer key, the applicants' examinations, and Form ES-4.1-1 to the CE.
- (7) For facility-graded examinations, an NRC examiner (typically the CE) will perform an independent review of the applicants' graded written examinations.
 - Upon receipt, immediately inventory the postexamination package to ensure that all required materials have been submitted. Inform the responsible NRC supervisor of any obvious deficiencies and contact the facility licensee to determine the status of any missing documentation.
 - Discuss any grading discrepancies with the grader before making any changes and document any changes by carefully lining out the original entry so that it remains legible, entering the revision with a brief explanation, and initialing the change. These changes may be documented electronically provided that the original entry is apparent, the individual making the change is identified, and an explanation for the change is included. Do not use Wite-Out™ or other methods that obscure the original entry.
 - If the written examination was graded by machine or using a template, ensure that the template accurately parallels the approved, finalized answer key.
- (8) The NRC examiner grading the written examination or reviewing the grading completed by the facility licensee will (1) fill in the *Written Examination Summary* section on page 1 of Form ES-3.1-1, check the *Pass*, *Fail*, or *Waive* block, and sign and date the grader line in the *Grading Results* section, and (2) forward the written examination package, including the master written examination and answer key, the applicants' examinations, and all associated forms (ES-3.1-1 and ES-4.1-1) to the CE. The CE will continue the process for the examination as outlined in ES 5.1.

5.0 POSTEXAMINATION ACTIVITIES

5.1 POSTEXAMINATION ACTIVITIES

A. Purpose

This standard describes the procedures for assembling and reviewing the examination package and notifying the facility licensee and applicants of the examination results.

B. Background

The goal is to complete licensing actions within 30 days of resolving the facility licensee's written examination comments.

C. Examination Report

The CE will prepare an examination report. The sample examination report included as Attachment 1 to this standard should be used as a guide.

- (1) The report documents the results of the examination, including generic strengths and weaknesses noted during the administration of the operating tests and the grading of the written examination, and issues discussed at the exit meeting.
- (2) The report will also include a copy of the written examination with the answer key modified to incorporate facility licensee comments.
- (3) Applicants' names and grades (i.e., Form ES-5.1-1, "Research and Test Reactor Examination Results Summary Sheet") will **not** be included in the examination report.

D. Results Package

The CE will also prepare an examination results letter that includes a public cover letter and its nonpublic enclosures. As a guide, the CE should use the sample examination results letter (Attachment 2 to this standard) and the enclosures described below.

- (1) The enclosures that are nonpublic will include an examination grading summary sheet (Form ES-5.1-1), individual operator examination reports (Form(s) ES-3.1-1), and individual candidates' written examination answer sheets, if a written examination was administered.

E. Examination Reviews

- (1) The CE will forward the examination package to another examiner for peer review.
- (2) The peer reviewer will review the grading of the written examination and the operating test documentation to ensure that they meet the requirements of ES 4.3 and ES 3.3, respectively. During these reviews, the peer reviewer should pay particular attention to the consistency of grading among all applicants tested.
- (3) After reviewing the package, the peer reviewer will check either the *Pass* or *Fail* block, then date and sign the peer reviewer line of each Form ES-3.1-1. If the peer reviewer disagrees with the grading of either the written examination or the operating test, they

will resolve the disagreement with the grader of that portion of the examination. The peer reviewer will return the package to the CE.

- (4) The CE will independently review the examination package, then concur with either the *Pass or Fail* block, and sign and date the *Grading Results* section of each Form ES-3.1-1.
- (5) The CE will give the completed packages to the BC who makes the final licensing decision. A person acting for the BC may **not** sign license or denial letters.

F. Licensing Action

- (1) The CE/BC will give the examination package to the OLA who will prepare license and denial letters for all applicants tested. Attachments 3 and 4 to this standard are sample RO and SRO (conditional) license and denial letters. The license and denial letters will become an attachment to the results package.
- (2) The OLA will give the completed packages to the BC, who makes the final licensing decision. The licensing official will consider all recommendations and sign each applicant's license or denial letter.

Applicants who withdrew before taking any part of the examination will not be sent a denial letter and will not be included in either package. Applicants who withdrew from the examination after it had started will be sent a denial letter.
- (3) If the BC does not agree with the final recommendation, he or she will consult with the grader, peer reviewer, and CE to resolve the disagreement. Disagreements usually arise because of poor documentation. Therefore, it is very important for examiners to be accurate in grading and writing comments.
- (4) If the BC decides to overturn the recommendation, they will line out and initial the affected summary evaluations. The BC will enter a new summary evaluation in the appropriate block and explain the change in the *Integrated Facility Operations* section of Form ES 3.1-1.
- (5) Once the licensing decisions are complete, the examiners should discard any marked documentation or rough notes for those applicants receiving licenses. Examiners should retain notes and documentation associated with denials until the denial becomes final according to ES 5.2.
- (6) For SRO-U applicants who fail an examination, the BC should direct a case-specific review to decide if the applicant failed because of significant deficiencies in RO knowledge or abilities. As stated in 10 CFR 55.7, "Additional requirements," "[t]he Commission may, by rule, regulation, or order, impose upon any licensee such requirements, in addition to those established in the regulations in this part, as it deems appropriate or necessary to protect health and to minimize danger to life or property." If the SRO-U applicant's deficiencies pose such a threat, the NRC may require the facility licensee to provide remedial training and reevaluation and submit evidence of its completion to the NRC.

G. Facility and Individual Notification

- (1) The CE may contact the facility licensee staff to inform them of examination results only after the licensing official has reviewed and approved them.
- (2) After the BC has signed the license and denial letters, the OLA will send each applicant the following material with their letter:
 - a copy of the “as given” Form ES-3.3-1
 - a copy of the applicant’s written examination answer sheet
- (3) The NPUFOL administrative assistant is responsible for distribution of the examination package.
- (4) The OLA is responsible for distribution of the examination results and the notifications to the individuals taking the examination per item 2 above.
- (5) If any examinations are regraded in response to an applicant’s request for NRC staff review or demand for a hearing (refer to ES 5.2), the original Form ES-5.1-1 on file will be corrected by lining out the old grade, entering the new grade, and initialing the change.

H. Returning Facility Reference Material

If all applicants passed the examination, the CE should return the facility reference material when the licenses are issued. If any applicants failed the examination, the examiner should retain the reference material to support either the resolution of appeals or the preparation of retake examinations.

I. Record Retention

The following documents should be maintained in ADAMS:

- (1) ES-2.1, Attachment 1, “Sample Examination Confirmation Letter,” with all enclosures (publicly available)
- (2) ES-2.1, Attachment 2, “Sample Examination Assignment Sheet,” with changes to identify the applicants that were actually examined (not publicly available)
- (3) ES-5.1, Attachment 1, “Examination Report,” with all enclosures (publicly available)
- (4) ES-5.1, Attachment 2, “Sample Results Cover Letter,” cover letter only (publicly available)
- (5) Form ES-5.1-1, “Research and Test Reactor Examination Results Summary Sheet” (not publicly available)
- (6) Cover letter forwarding certificates for newly licensed individuals to the facility licensee (but not the enclosed certificates) (not publicly available)

1 Each applicant's docket file should contain the original or a copy of the following items:

- 2
- 3 (1) Form ES-3.3-1, "RO/SRO Competency Grading Guidance for Integrated Facility
- 4 Operations" (all pages), with final, clean versions of page 5 and all associated
- 5 documentation
- 6
- 7 (2) all correspondence with the applicant
- 8
- 9 (3) the applicant's written examination answer sheets

10

11 **J. Attachments/Forms**

12

13 Attachment 1, "Sample Examination Report" (Public)

14 Attachment 2, "Sample Examination Results Cover Letter" (Public)

15 Attachment 3, "Sample License Letter" (Nonpublic)

16 Attachment 4, "Sample Denial Letter" (Nonpublic)

17 Form ES-5.1-1, "Research and Test Reactor Examination Results Summary Sheet" (Nonpublic)

ATTACHMENT 1
SAMPLE EXAMINATION REPORT

[NRC Letterhead]

[Date]

[Name, Title]

[Facility Name]

[Street Address]

[City, State Zip Code]

SUBJECT: INITIAL EXAMINATION REPORT NO. 50-[NUMBER]/OL-YY-NN, [FACILITY
NAME]

Dear [Name]:

During the week of [date], a U.S. Nuclear Regulatory Commission (NRC) initial operator licensing examination was administered at your reactor. The examination was conducted according to NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors," Revision 3. Examination questions and preliminary findings were discussed at the conclusion of the examination with those members of your staff identified in the enclosed report.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public inspections, exemptions, requests for withholding," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <https://www.nrc.gov/reading-rm/adams.html>. The NRC is forwarding the individual grades to you in a separate letter that will not be released publicly.

If you have any questions concerning this examination, please contact [chief examiner] at [telephone number], or via email at [email address].

Sincerely,

[Branch Chief with Program Responsibility]

Docket No. 50-[number]

Enclosures:

1. Examination Report No. 50-[number]/OL-YY-NN
2. Facility Comments with NRC Resolution
3. Corrected Written Examination

cc w/enclosures: Facility Training Manager
(Standard Distribution) plus [Appropriate Project Manager]

ATTACHMENT 1
SAMPLE EXAMINATION REPORT (Continued)

ENCLOSURE 1

EXAMINATION REPORT NO. 50-[NUMBER]/OL-YY-NN
[FACILITY]

Facility License No.: [License No.]

Submitted by: _____
[Name], Chief Examiner

_____/_____/_____
Date

Summary:

During the week of [date], NRC initial operator licensing examinations were administered to [number] SRO-I, [number] SRO-U, and [number] RO license applicants. [Number] SROs and [number] ROs passed these examinations. [All others failed.]

Exit Meeting:

Attendees:

[Name, Title, Facility]

[Name, Title, Facility]

[Name], Examiner, NRC

At the conclusion of the site visit, the NRC examiners met with representatives of the facility licensee staff to discuss the results of the examinations. The examiners made the following observations concerning your training program:

- a. Areas of generic weaknesses were found in [brief statement of the areas of weakness identified during the exit meeting]. The facility licensee staff committed to placing more emphasis on these areas in future training programs [Open Item number].
- b. Areas in which the examiners believe that the applicants exhibited good training and knowledge are [brief statement of any strengths identified during the exit meeting].
- c. The facility licensee staff presented comments on the written examination, and those comments have been incorporated into the examination attached to this report.

OR

- c. The facility licensee staff presented comments on the written examination, and those comments along with their resolution are included as Enclosure 2 to this report.

ATTACHMENT 1
SAMPLE EXAMINATION REPORT (Continued)

ENCLOSURE 2

FACILITY COMMENTS WITH NRC RESOLUTION

Question 4.01

Comment: Control Room Log Book should be included as an additional correct response.

Justification: Administrative Procedure AP-4.0, page 8.

NRC Resolution: Comment accepted. The alternative answer is acceptable but not required for a complete answer.

1
2
3
4
5
6
7
8

ATTACHMENT 1
SAMPLE EXAMINATION REPORT (Continued)

ENCLOSURE 3

CORRECTED WRITTEN EXAMINATION

ATTACHMENT 2
SAMPLE EXAMINATION RESULTS COVER LETTER

[NRC Letterhead]
[Date]

[Name, Title]
[Facility Name]
[Street Address]
[City, State Zip Code]

SUBJECT: INITIAL EXAMINATION RESULTS LETTER NO. 50-[NUMBER]/OL-YY-NN,
[FACILITY NAME]

Dear [Name]:

This letter forwards to you personal privacy information associated with the U.S. Nuclear Regulatory Commission initial operator licensing examinations administered at your reactor during the week of [date]. This information supplements the publicly available information in the examination report. Enclosure 1 lists individual grades for all candidates. Enclosure 2 includes individual candidate summaries for all candidates (license/denial letters and supporting documentation).

If you have any questions regarding the examination, please contact [chief examiner] at [telephone number] or by email at [email address].

Sincerely,

[Branch Chief with Program Responsibility]

Docket No. 50-[number]

Enclosures:
As stated

DISTRIBUTION:
PUBLIC (w/o enclosures)
Facility File ([LA]) O6-D17

ATTACHMENT 3

SAMPLE LICENSE LETTER

[NRC Letterhead]
[Date]

LICENSE

Docket No. 55-[number]

[Applicant Name]
[Street Address]
[City, State Zip Code]

Dear [Name]:

Pursuant to the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended, and subject to the conditions and limitations incorporated herein, the U.S. Nuclear Regulatory Commission hereby licenses you to [direct the licensed activities of licensed operators at and to manipulate all controls of/manipulate all controls of] the [name of facility, facility license number].

Your license number is [S]OP[number]. Your docket number is 55[number]. The effective date is [date]. Your operator license/senior operator license expires upon termination of your employment with the facility licensee or upon determination by the facility licensee that you no longer need to maintain this license.

This license is subject to the provisions of Title 10 of the *Code of Federal Regulations* 55.53, "Conditions of licenses," with the same force and effect as if fully set forth herein.

While performing licensed duties, you shall observe the operating procedures and other conditions specified in the facility license that authorizes operation of the facility. [You shall also comply with the following:

You shall wear corrective lenses while performing the activities for which you are licensed.]

The issuance of this license is based on an examination of your qualifications, including the representations and information contained in your application for this license.

A copy of this license has been made available to the facility licensee.

For the U.S. Nuclear Regulatory Commission,

[Name and title of licensing official]

Docket No. 55-[number]

cc: [Facility licensee representative who signed the applicant's NRC Form 398]

ATTACHMENT 4
SAMPLE DENIAL LETTER

[NRC Letterhead]

[Date]

[Applicant Name]
[Street Address]
[City, State Zip Code]

Dear [Name]:

This letter is to inform you that your grade on the [operating test, written examination, operating test and written examination] taken on [date(s)], in connection with your application for a [reactor operator, senior reactor operator] license for the [facility name], indicates that you did not pass that [test, examination, test and examination]. As a result, the U.S. Nuclear Regulatory Commission (NRC) proposes to deny your application. Enclosed is a copy of the [operating test, written examination, operating test and written examination] results indicating those areas in which you exhibited deficiencies. [A copy of the master answer key is also provided.]

If you accept the proposed denial and decline to request either an NRC staff review or a hearing within 20 days as discussed below, this proposed denial will become a final denial. You may then reapply for a license according to Title 10 of the *Code of Federal Regulations* (10 CFR) 55.35, "Re-applications."

* [Because you passed the written examination but did not pass the operating test, you may request, in the new application, to be excused from retaking the written examination. The NRC may grant this request at the agency's discretion if it determines that sufficient justification is presented.]

* OR [Because you passed the operating test but did not pass the written examination, you may request, in the new application, to be excused from reexamination on the operating test. The NRC may grant this request at the agency's discretion if it determines that sufficient justification is presented.]

** OR [Because you did not pass either the written examination or the operating test, you will be required to retake both the written examination and the operating test.]

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

- You may request an NRC staff review of the grading of your examination. Your written request must be sent to the [appropriate division director], U.S. Nuclear Regulatory Commission, Washington, DC 20555. Your request must identify the portions of your examination that you believe were graded incorrectly or too severely. In addition, you must provide the basis, including supporting documentation (such as procedures, instructions, computer printouts, and chart traces), in as much detail as possible, to support your contention that certain of your responses were graded incorrectly or too severely.

The NRC will review your contentions, reconsider your grading, and inform you of the results. If the proposed denial is sustained, you will have the opportunity to request a hearing pursuant to 10 CFR 2.103(b)(2) at that time.

- Under 10 CFR 2.103(b)(2), you may demand a hearing on this denial of your application within 20 days after the date of this letter. Under 10 CFR 2.307(a), you may request an

1 extension of this time limit if you can show good cause. A demand for a hearing shall be
2 filed in accordance with 10 CFR Part 2, "Agency Rules of Practice and Procedure,"
3 which is accessible electronically from the NRC Library on the NRC's website at
4 <https://www.nrc.gov/reading-rm/doc-collections/cfr/>. Generally, a demand for a hearing
5 should explain why you believe that the NRC's denial of your application was in error
6 and why you believe that you have, in fact, satisfied the requirements for license
7 issuance.

- 8
9 • [Consult with the Office of the General Counsel for the most up-to-date E-Filing
10 language.]
11
- 12 • A demand for a hearing must be filed in accordance with the NRC's E-Filing rule
13 (Volume 72 of the *Federal Register*, page 49139; August 28, 2007). The E-Filing
14 process requires participants to submit and serve all adjudicatory documents over the
15 internet, or in some cases, to mail copies on electronic storage media. Detailed guidance
16 on making electronic submissions may be found in the Guidance for Electronic
17 Submissions to the NRC and on the NRC website at [https://www.nrc.gov/site-help/e-](https://www.nrc.gov/site-help/e-submittals.html)
18 [submittals.html](https://www.nrc.gov/site-help/e-submittals.html). Participants may not submit paper copies of their filings unless they
19 seek an exemption in accordance with the procedures described below. To comply with
20 the procedural requirements of E-Filing, at least 10 days before the filing deadline, the
21 participant should contact the Office of the Secretary by email at
22 hearing.docket@nrc.gov or by telephone at 301-415-1677 to (1) request a digital
23 identification (ID) certificate, which allows the participant (or its counsel or
24 representative) to digitally sign submissions and access the E-Filing system for any
25 proceeding in which it is participating and (2) advise the Secretary that the participant
26 will be submitting a demand for a hearing. Based on this information, the Secretary will
27 establish an electronic docket for the hearing in this proceeding if the Secretary has not
28 already established an electronic docket. Information about applying for a digital ID
29 certificate is available on the NRC's public website at [https://www.nrc.gov/site-help/e-](https://www.nrc.gov/site-help/e-submittals/getting-started.html)
30 [submittals/getting-started.html](https://www.nrc.gov/site-help/e-submittals/getting-started.html). Once a participant has obtained a digital ID certificate
31 and a docket has been created, the participant can then submit a demand for a hearing.
32 Submissions must be in Portable Document Format (PDF). Additional guidance on PDF
33 submissions is available on the NRC's public website at
34 <https://www.nrc.gov/sitehelp/electronic-sub-ref-mat.html>. A filing is considered complete
35 at the time the document is submitted through the NRC's E-Filing system. To be timely,
36 an electronic filing must be submitted to the E-Filing system no later than 11:59 p.m.
37 eastern time on the due date. Upon receipt of a transmission, the E-Filing system
38 time-stamps the document and sends the submitter an email notice confirming receipt of
39 the document. The E-Filing system also distributes an email notice that provides access
40 to the document to the NRC's Office of the General Counsel and any others who have
41 advised the Office of the Secretary that they wish to participate in the proceeding, so that
42 the filer need not serve the document on those participants separately. Therefore,
43 applicants and other participants (or their counsel or representative) must apply for and
44 receive a digital ID certificate before adjudicatory documents are filed so that they can
45 obtain access to the documents through the E-Filing system.

- 1 • A person filing electronically using the NRC’s adjudicatory E-Filing system may seek
2 assistance by contacting the NRC’s Electronic Filing Help Desk through the “Contact Us”
3 link located on the NRC’s public website at [https://www.nrc.gov/site-help/e-](https://www.nrc.gov/site-help/e-submittals.html)
4 [submittals.html](https://www.nrc.gov/site-help/e-submittals.html), by email to MSHD.Resource@nrc.gov, or by a toll-free call to
5 1-866-672-7640. The NRC Electronic Filing Help Desk is available between 9 a.m. and
6 6 p.m. eastern time, Monday through Friday, excluding Federal Government holidays.
7 Participants who believe that they have a good cause for not submitting documents
8 electronically must file an exemption request, in accordance with 10 CFR 2.302(g), with
9 their initial paper filing stating why there is good cause for not filing electronically and
10 requesting authorization to continue to submit documents in paper format. Such filings
11 must be submitted by (1) first-class mail addressed to the Office of the Secretary of the
12 Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001,
13 Attention: Rulemaking and Adjudications Staff, or (2) courier, express mail, or
14 expedited delivery service to the Office of the Secretary, 11555 Rockville Pike,
15 Rockville, MD 20852, Attention: Rulemaking and Adjudications Staff. Participants filing
16 adjudicatory documents in this manner are responsible for serving the document on all
17 other participants. Filing is considered complete by first-class mail as of the time of
18 deposit in the mail, or by courier, express mail, or expedited delivery service upon
19 depositing the document with the provider of the service. A presiding officer, having
20 granted an exemption request from using E-Filing, may require a participant or party to
21 use E-Filing if the presiding officer subsequently determines that the reason for granting
22 the exemption from use of E-Filing no longer exists.
23
- 24 • Documents submitted in adjudicatory proceedings will appear in the NRC’s electronic
25 hearing docket, which is available to the public at <https://adams.nrc.gov/ehd>, unless
26 excluded pursuant to an order of the Commission or the presiding officer. If you do not
27 have an NRC-issued digital ID certificate as described above, click “cancel” when the
28 link requests certificates, and you will be automatically directed to the NRC’s electronic
29 hearing dockets where you will be able to access any publicly available documents in a
30 particular hearing docket. Participants are asked not to include personal privacy
31 information, such as Social Security numbers, home addresses, or personal phone
32 numbers in their filings, unless an NRC regulation or other law requires submission of
33 such information. For example, in some instances, individuals provide home addresses
34 to demonstrate proximity to a facility or site. With respect to copyrighted works, except
35 for limited excerpts that serve the purpose of the adjudicatory filings and would
36 constitute a Fair Use application, participants are asked not to include copyrighted
37 materials in their submission.
38

39 Pursuant to 10 CFR 55.35, you may not reapply for a license until your application has been
40 finally denied. Failure on your part to exercise one of these options within 20 days constitutes a
41 waiver of your opportunity for an NRC staff review and your right to demand a hearing and, for
42 the purpose of reapplication under 10 CFR 55.35, renders this letter a notice of final denial of
43 your application, effective as of the date of this letter.

1 If you have any questions, please contact [name] at [telephone number] or by email at [email
2 address].
3

4 Sincerely,

5
6 [Name and title of licensing official]
7

8 Docket No. 55-[number]
9

10 Enclosures:

11 As stated
12

13 cc: [senior management facility representative who signed the applicant's NRC Form 398]
14

15
16 * Use for initial reactor operator or senior reactor operator license applicants who passed either the
17 written examination or the operating test but failed the other.

18 ** Use for second and subsequent retake applicants.

19 *** Use for applicants who failed both the written examination and the operating test.

**PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY
FORM ES-5.1-1**

RESEARCH AND TEST REACTOR EXAMINATION RESULTS SUMMARY SHEET

Facility:					Reactor Status:							
Written Examination Date:					Operating Test Dates:							
Examiners:												
OVERALL RESULTS			Total No.		No. Passed		% Passed		No. Failed		% Failed	
Reactor Operator							%				%	
Senior Operator							%				%	
Name		Docket 55-	Type¹	Written Grade				Results²/Initials³				
				A	B	C	Total		Written		Operating	

ES 5.1—15 of 15

NOTES:

¹ 1=RO, 2=SRO-I, 3=SRO-U, 4=RO retake, 5=SRO-I retake, 6=SRO-U retake, 7=SRO-Fuel Handler

² P=Passed, F=Failed, W=Waived, N/A=Not Applicable

³ Enter the initials of the examiner who graded the written examination or administered the operating test.

PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY

5.2 ADMINISTRATIVE REVIEWS AND HEARINGS

A. Purpose

This standard describes the options and associated responsibilities for license application denials, informal NRC staff reviews, and hearings.

B. Background

The letter in ES 5.1, Attachment 4, “Sample Denial Letter,” sent to applicants who fail an operator licensing examination constitutes a proposed application denial. The letter informs the applicant of their options for appeal as specified in Section C below and includes a list of the deficiencies noted.

Applicants who fail an operator licensing examination may reapply pursuant to the provisions of 10 CFR 55.35, only after their application has been finally denied, and only if they do not have a pending request for an NRC staff review or demand for a hearing. The NRC will not accept a reapplication while a request for an NRC staff review or a demand for a hearing is pending.

The procedures that apply when the NRC has denied an application for an operator license because the applicant fails to meet the eligibility requirements in 10 CFR 55.31 are similar to those for processing NRC staff reviews and license denials. Section E explains the details of this process.

C. Applicant Responsibilities

- (1) An applicant who does not appear to meet the experience and training requirements for a license may be asked to provide additional information in accordance with ES 2.2. If the NRC still denies the application after the applicant provides the additional information requested by the NRC, the applicant may exercise one of the following options within 20 days after the date of the proposed denial letter:
 - a. Do nothing. The proposed denial letter then becomes the final denial. The applicant may reapply after obtaining the requisite training or experience.
 - b. Request NRC staff review of the application denial. Applicants must submit such requests in accordance with the requirements in 10 CFR 55.5(b)(3). The applicant’s submittal must clearly state the basis for the request, including supporting documentation as applicable.
 - c. Demand a hearing within 20 days from the date of the denial or such longer period as may be specified in the denial under 10 CFR 2.103(b)(2). The application denial letter (see ES 5.1, Attachment 4) provides detailed guidance related to the process of demanding a hearing. Under 10 CFR 2.307(a), the applicant may request an extension of this time limit if they can show good cause. A demand for a hearing shall be filed in accordance with 10 CFR Part 2, which is accessible electronically from the NRC Library on the agency’s website at <https://www.nrc.gov/reading-rm/doc-collections/cfr/>. Generally, a demand for a hearing should explain why the applicant believes that the NRC’s denial of their application was in error and why the applicant believes that they have, in fact, satisfied the requirements for license issuance. Applicants must submit such demands electronically in accordance with the requirements of 10 CFR 2.302.

1 The NRC's website at <https://www.nrc.gov/site-help/e-submittals.html> offers
2 detailed guidance on making electronic submissions.
3

4 (2) If an applicant fails the operator licensing written examination or operating test (or both)
5 and receives a proposed license denial letter issued in accordance with ES 5.1, the
6 applicant has 20 days from the date of the letter to exercise one of the following options:
7

- 8 a. Do nothing. The proposed denial letter then becomes the final denial. The
9 applicant may reapply, pursuant to 10 CFR 55.35.
10
11 b. Request that the NRC staff review and regrade the written examination, the
12 operating test, or both, in light of new information to be provided by the applicant.
13 Applicants must submit such requests in accordance with the requirements
14 in 10 CFR 55.5(b)(3). If the applicant submits such a request, the NRC will not
15 consider a reapplication pursuant to 10 CFR 55.35 until a denial is final.
16

17 The applicant's request for an NRC staff review must identify the item(s) for
18 which additional review is requested and must include supporting documentation.
19 The applicant is responsible for ensuring that the request and the supporting
20 documentation are sent to the staff within 20 days after the date of the proposed
21 denial letter.
22

23 If the NRC staff reviews a failure and determines that the applicant did not
24 provide sufficient basis to justify passing grades on all categories of the licensing
25 examination, the NRC staff will issue a letter to the applicant sustaining the
26 proposed denial. The applicant may then demand a hearing pursuant
27 to 10 CFR 2.103(b)(2). In such instances, the applicant must submit the demand
28 for a hearing within 20 days after the date on the letter from the staff sustaining
29 the proposed denial. In addition, the applicant must submit the hearing demand
30 in accordance with Section C.2.c.
31

32 If the applicant does not demand a hearing following an NRC staff review that
33 sustains a proposed denial, the proposed denial becomes the final denial. The
34 applicant may then reapply for a license pursuant to 10 CFR 55.35.
35

- 36 c. Demand a hearing pursuant to 10 CFR 2.103(b)(2). The applicant must submit
37 the demand for a hearing in accordance with the requirements in 10 CFR 2.302.
38 If the applicant demands a hearing, the NRC will not consider a reapplication
39 pursuant to 10 CFR 55.35 until a denial is final.

D. Facility Licensee Responsibilities

The NRC may ask the facility licensee to provide reference materials, technical support, and a confirmation of the validity of the test items, as necessary for the NRC staff to evaluate and resolve any concerns raised by a license applicant who asks the NRC to reconsider a proposed denial of an application.

E. NRC Responsibilities

- (1) The NRC staff will review 10 CFR Part 55 license application denials based on eligibility as described in Section F.1.
- (2) The NRC staff will review 10 CFR Part 55 license application denials based on examination failures as described in Section F.2.
- (3) The Commission will conduct hearings on 10 CFR Part 55 operator licensing in accordance with 10 CFR Part 2.

F. NRC Staff Review Procedures

1. Application Eligibility

If an applicant requests an NRC staff review in accordance with Section C.1.b, the NPUFOL staff will generally complete its review of the applicant's eligibility within 60 days of receiving the request. Upon completing its review, the NPUFOL staff will notify the applicant in writing as to whether they will be allowed to take the license examination. If the review leads the NPUFOL staff to sustain the proposed denial, the applicant may then demand a hearing pursuant to 10 CFR 2.103(b)(2).

2. Examination Results

If an applicant requests an NRC staff review in accordance with Section C.2.b, the NPUFOL staff will generally complete its review, as follows, within 45 days after receiving the request.

- a. The NPUFOL staff will determine whether to (1) review the request internally or (2) convene a three-person board to review the request. A board will normally comprise a BC and two examiners or subject matter experts, all of whom must not have been involved with the applicant's licensing examination.

For written examinations, the review will generally focus only on those questions that the applicant is contesting. The review shall evaluate the original grading of the applicant's (or applicants') examination(s), the reference material supplied by the facility licensee, and the contentions and supporting documentation provided by the applicant(s). If there are multiple review requests, all question deletions and answer key changes will be applied equally to each requestor's examination, without regard to who submitted the request. Moreover, in those rare instances when a generic finding results in a change to an answer key (e.g., failure to provide a printout or other reference necessary to answer a question), the corrective action may be applied, as appropriate, to adjust the grading of other questions that were not contested.

For operating tests, the review shall evaluate the examiner's comments, notes documented by an NRC examiner who observed a facility-administered operating test, the examination report, the test that was administered, and the contentions and

1 supporting documentation provided by the applicant or facility licensee (e.g., reactor
2 system descriptions, operating procedures, logs, chart recorder traces, process
3 computer printouts, etc.).
4

5 b. Based on the findings and recommendations from the review, the NPUFOL staff will
6 decide whether to sustain or overturn the applicant's license examination failure. The
7 NPUFOL staff will then notify the applicant in writing of the results of the review. If the
8 review leads the NPUFOL staff to sustain the proposed denial, the applicant may then
9 demand a hearing pursuant to 10 CFR 2.103(b)(2).
10

11 c. If the proposed denial is overturned, then the NPUFOL staff will review the examination
12 results of the other applicants to determine whether any of the licensing decisions are
13 affected and update the master examination file to reflect any test item deletions or
14 answer key changes.
15

16 **G. Notes**

17

18 (1) A BC or above will sign all letters informing an applicant of an examination failure or an
19 application denial. The BC will include the appropriate licensing assistant on distribution
20 for all correspondence generated according to this standard.
21

22 (2) All facility licensee representatives who signed the license applications will be sent
23 copies of all external correspondence generated because of this standard.
24

25 (3) The BC is responsible for informing management of NRC staff review requests and
26 hearing demands from license applicants.
27

28 (4) All correspondence referenced in this standard will be sent to the applicant via mail, with
29 return receipt requested, and/or email.
30

31 **H. Attachments/Forms**

32

33 Attachment 1, "Sample License Notification Letter" (from Division Director)

34 Attachment 2, "Proposed License Denial Letter" (from Division Director)

35 Attachment 3, "Initial Application Denial Letter" (from Division Director)

1 **ATTACHMENT 1**

2 **SAMPLE LICENSE NOTIFICATION LETTER**

3
4 [NRC Letterhead]

5
6 [Date]

7
8
9 [Applicant Name]

10 [Street Address]

11 [City, State Zip Code]

12
13 Dear [Applicant's Name]:

14
15 In response to your letter dated [postmarked date], the U.S. Nuclear Regulatory Commission
16 (NRC) staff has reviewed the results of the [operating test, written examination, or operating test
17 and written examination] taken by you on [date(s)], in connection with your application for a
18 [reactor operator or senior reactor operator] license for the [facility name]. Upon review of the
19 additional information that you supplied, the staff has determined that you passed the [operating
20 test, written examination, or operating test and written examination].

21
22 The NRC will issue you a [reactor operator or senior reactor operator] license, pursuant to
23 Title 10 of the *Code of Federal Regulations* 55.51, "Issuance of licenses," in a separate letter.

24
25 For your information, I am enclosing a copy of the NRC staff's resolution of each of your
26 comments. If you have any questions, please contact [name] at [telephone number] or by email
27 at [email address].

28
29 Sincerely,

30
31
32 [Division Director with Program Responsibility]
33 Office of Nuclear Reactor Regulation

34
35
36 Docket No. 55-[number]

37
38 Enclosure: As stated

39 cc w/o enclosure: [senior management facility representative who signed the applicant's NRC
40 Form 398]

41 cc w/enclosure: [Training representative who signed the applicant's NRC Form 398]

ATTACHMENT 2
PROPOSED LICENSE DENIAL LETTER

[NRC Letterhead]

[Date]

[Applicant Name]

[Street Address]

[City, State Zip Code]

Dear [Applicant's Name]:

In response to your letter dated [postmarked date], the U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the results of the [operating test, written examination, or operating test and written examination] taken by you on [date(s)], in connection with your application for a [reactor operator or senior reactor operator] license for the [facility name]. Upon review of the additional information that you supplied, the staff has determined that you did not pass the [operating test, written examination, or operating test and written examination]. The results of the review are provided in the enclosed report. Consequently, the results of your [operating test, written examination, or operating test and written examination] now become the final results and a denial of your license application.

Under Title 10 of the *Code of Federal Regulations* (10 CFR) 55.33, "Disposition of an initial application," the NRC will approve an initial application for [a reactor operator license or a senior reactor operator license] if it finds that (1) the applicant's medical condition and general health will not adversely affect the performance of assigned operator job duties or cause operational errors endangering public health and safety and (2) the applicant has passed the requisite written examination and operating test. Your application was denied because the NRC determined that you did not pass [the written examination, the operating test, or either the written examination or the operating test].

Under 10 CFR 55.35, "Re-applications," you may file a new application.

* [Because you passed the written examination but did not pass the operating test, you may request, in the new application, to be excused from retaking the written examination. The NRC may grant this request at the agency's discretion if it determines that sufficient justification is presented.]

* OR [Because you passed the operating test but did not pass the written examination, you may request, in the new application, to be excused from reexamination on the operating test. The NRC may grant this request at the agency's discretion if it determines that sufficient justification is presented.]

** OR [Because you did not pass either the written examination or the operating test, you will be required to retake both the written examination and the operating test.]

Under 10 CFR 2.103(b)(2), you may demand a hearing on this denial of your application within 20 days after the date of this letter. Under 10 CFR 2.307(a), you may request an extension of this time limit if you can show good cause. A demand for a hearing shall be filed in accordance with 10 CFR Part 2, "Agency Rules of Practice and Procedure," which is accessible electronically from the NRC Library on the NRC's website at <https://www.nrc.gov/reading-rm/doc-collections/cfr/>. Generally, a demand for a hearing should explain why you believe that the NRC's denial of your application was in error and why you believe that you have, in fact, satisfied the requirements for license issuance.

[Consult with the Office of the General Counsel for the most up-to-date E-Filing language.]

1 A demand for a hearing must be filed in accordance with the NRC's E-Filing rule (Volume 72 of
2 the *Federal Register*, page 49139; August 28, 2007). The E-Filing process requires participants
3 to submit and serve all adjudicatory documents over the internet, or in some cases, to mail
4 copies on electronic storage media. Detailed guidance on making electronic submissions may
5 be found in the Guidance for Electronic Submissions to the NRC and on the NRC website at
6 <https://www.nrc.gov/site-help/e-submittals.html>. Participants may not submit paper copies of
7 their filings unless they seek an exemption in accordance with the procedures described below.
8

9 To comply with the procedural requirements of E-Filing, at least 10 days before the filing
10 deadline, the participant should contact the Office of the Secretary by email at
11 hearing.docket@nrc.gov or by telephone at 301-415-1677 to (1) request a digital identification
12 (ID) certificate, which allows the participant (or its counsel or representative) to digitally sign
13 submissions and access the E-Filing system for any proceeding in which it is participating and
14 (2) advise the Secretary that the participant will be submitting a demand for a hearing. Based on
15 this information, the Secretary will establish an electronic docket for the hearing in this
16 proceeding if the Secretary has not already established an electronic docket.
17

18 Information about applying for a digital ID certificate is available on the NRC's public website at
19 <https://www.nrc.gov/site-help/e-submittals/getting-started.html>. Once a participant has obtained a
20 digital ID certificate and a docket has been created, the participant can then submit a demand for a
21 hearing. Submissions must be in Portable Document Format (PDF). Additional guidance on PDF
22 submissions is available on the NRC's public website at [https://www.nrc.gov/sitehelp/electronic-](https://www.nrc.gov/sitehelp/electronic-sub-ref-mat.html)
23 [sub-ref-mat.html](https://www.nrc.gov/sitehelp/electronic-sub-ref-mat.html). A filing is considered complete at the time the document is submitted through the
24 NRC's E-Filing system. To be timely, an electronic filing must be submitted to the E-Filing system
25 no later than 11:59 p.m. eastern time on the due date. Upon receipt of a transmission, the E-Filing
26 system time-stamps the document and sends the submitter an email notice confirming receipt of
27 the document. The E-Filing system also distributes an email notice that provides access to the
28 document to the NRC's Office of the General Counsel and any others who have advised the Office
29 of the Secretary that they wish to participate in the proceeding, so that the filer need not serve the
30 document on those participants separately. Therefore, applicants and other participants (or their
31 counsel or representative) must apply for and receive a digital ID certificate before adjudicatory
32 documents are filed so that they can obtain access to the documents through the E-Filing system.
33

34 A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance
35 by contacting the NRC's Electronic Filing Help Desk through the "Contact Us" link located on the
36 NRC's public website at <https://www.nrc.gov/site-help/e-submittals.html>, by email to
37 MSHD.Resource@nrc.gov, or by a toll-free call to 1-866-672-7640. The NRC Electronic Filing
38 Help Desk is available between 9 a.m. and 6 p.m. eastern time, Monday through Friday,
39 excluding Federal Government holidays. Participants who believe that they have a good cause
40 for not submitting documents electronically must file an exemption request, in accordance
41 with 10 CFR 2.302(g), with their initial paper filing stating why there is good cause for not filing
42 electronically and requesting authorization to continue to submit documents in paper format.
43 Such filings must be submitted by (1) first-class mail addressed to the Office of the Secretary of
44 the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001,
45 Attention: Rulemaking and Adjudications Staff, or (2) courier, express mail, or expedited delivery
46 service to the Office of the Secretary, 11555 Rockville Pike, Rockville, MD 20852,
47 Attention: Rulemaking and Adjudications Staff. Participants filing adjudicatory documents in this
48 manner are responsible for serving the document on all other participants. Filing is considered
49 complete by first-class mail as of the time of deposit in the mail, or by courier, express mail, or
50 expedited delivery service upon depositing the document with the provider of the service. A
51 presiding officer, having granted an exemption request from using E-Filing, may require a
52 participant or party to use E-Filing if the presiding officer subsequently determines that the
53 reason for granting the exemption from use of E-Filing no longer exists.

Documents submitted in adjudicatory proceedings will appear in the NRC's electronic hearing docket, which is available to the public at <https://adams.nrc.gov/ehd>, unless excluded pursuant to an order of the Commission or the presiding officer. If you do not have an NRC-issued digital ID certificate as described above, click "cancel" when the link requests certificates, and you will be automatically directed to the NRC's electronic hearing dockets where you will be able to access any publicly available documents in a particular hearing docket. Participants are asked not to include personal privacy information, such as Social Security numbers, home addresses, or personal phone numbers in their filings, unless an NRC regulation or other law requires submission of such information. For example, in some instances, individuals provide home addresses to demonstrate proximity to a facility or site. With respect to copyrighted works, except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute a Fair Use application, participants are requested not to include copyrighted materials in their submission.

Failure on your part to demand a hearing within 20 days constitutes a waiver of your right to demand a hearing and, for the purpose of reapplication under 10 CFR 55.35, renders this letter a notice of final denial of your application, effective as of the date of this letter.

If you have any questions, please contact [name] at [telephone number] or by email at [email address].

Sincerely,

[Division Director with Program Responsibility]
Office of Nuclear Reactor Regulation

Docket No. 55-[number]

Enclosure: As stated

cc w/o enclosure: [senior management facility representative who signed the applicant's NRC Form 398]

cc w/enclosure: [Training representative who signed the applicant's NRC Form 398]

* Use for initial reactor operator or senior reactor operator license applicants who passed either the written examination or the operating test but failed the other.

** Use for applicants who failed both the written examination and the operating test.

ATTACHMENT 3
INITIAL APPLICATION DENIAL LETTER

[NRC Letterhead]
[Date]

[Applicant Name]
[Street Address]
[City, State Zip Code]

Dear [Applicant's Name]:

In response to your letter dated [postmarked date], the U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the denial of your application for a [reactor operator or senior reactor operator] license. Upon review of the additional information that you supplied, the staff has determined that you still do not meet the eligibility requirements.

[Discussion of deficiencies with reference to relevant parts of Title 10 of the *Code of Federal Regulations* (10 CFR) 55.31, ES 2.2, or an NRC-approved facility training program]. When you have met the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 55.31, "How to apply," you may submit another application.

Under 10 CFR 2.103(b)(2), you may demand a hearing on this denial of your application within 20 days after the date of this letter. Under 10 CFR 2.307(a), you may request an extension of this time limit if you can show good cause. A demand for a hearing shall be filed in accordance with 10 CFR Part 2, "Agency Rules of Practice and Procedure," which is accessible electronically from the NRC Library on the NRC's website at <https://www.nrc.gov/reading-rm/doc-collections/cfr/>. Generally, a demand for a hearing should explain why you believe that the NRC's denial of your application was in error and why you believe that you have, in fact, satisfied the requirements for license issuance.

[Consult with the Office of the General Counsel for the most up-to-date E-Filing language.]

A demand for a hearing must be filed in accordance with the NRC's E-Filing rule (Volume 72 of the *Federal Register*, page 49139; August 28, 2007). The E-Filing process requires participants to submit and serve all adjudicatory documents over the internet or, in some cases, to mail copies on electronic storage media. Detailed guidance on making electronic submissions may be found in the Guidance for Electronic Submissions to the NRC and on the NRC website at <https://www.nrc.gov/site-help/e-submittals.html>. Participants may not submit paper copies of their filings unless they seek an exemption in accordance with the procedures described below.

To comply with the procedural requirements of E-Filing, at least 10 days before the filing deadline, the participant should contact the Office of the Secretary by email at hearing.docket@nrc.gov or by telephone at 301-415-1677 to (1) request a digital identification (ID) certificate, which allows the participant (or its counsel or representative) to digitally sign submissions and access the E-Filing system for any proceeding in which it is participating and (2) advise the Secretary that the participant will be submitting a demand for a hearing. Based on this information, the Secretary will establish an electronic docket for the hearing in this proceeding if the Secretary has not already done so.

Information about applying for a digital ID certificate is available on the NRC's public website at <https://www.nrc.gov/site-help/e-submittals/getting-started.html>. Once a participant has obtained a digital ID certificate and a docket has been created, the participant can then submit a demand for a

1 hearing. Submissions must be in Portable Document Format (PDF). Additional guidance on PDF
2 submissions is available on the NRC's public website at [https://www.nrc.gov/sitehelp/electronic-](https://www.nrc.gov/sitehelp/electronic-sub-ref-mat.html)
3 [sub-ref-mat.html](https://www.nrc.gov/sitehelp/electronic-sub-ref-mat.html). A filing is considered complete at the time the document is submitted through the
4 NRC's E-Filing system. To be timely, an electronic filing must be submitted to the E-Filing system
5 no later than 11:59 p.m. eastern time on the due date. Upon receipt of a transmission, the E-Filing
6 system time-stamps the document and sends the submitter an email notice confirming receipt of
7 the document. The E-Filing system also distributes an email notice that provides access to the
8 document to the NRC's Office of the General Counsel and any others who have advised the Office
9 of the Secretary that they wish to participate in the proceeding, so that the filer need not serve the
10 document on those participants separately. Therefore, applicants and other participants (or their
11 counsel or representative) must apply for and receive a digital ID certificate before adjudicatory
12 documents are filed so that they can obtain access to the documents through the E-Filing system.

13
14 A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance
15 by contacting the NRC's Electronic Filing Help Desk through the "Contact Us" link located on the
16 NRC's public website at <https://www.nrc.gov/site-help/e-submittals.html>, by email to
17 MSHD.Resource@nrc.gov, or by a toll-free call to 1-866-672-7640. The NRC Electronic Filing
18 Help Desk is available between 9 a.m. and 6 p.m. eastern time, Monday through Friday,
19 excluding Federal Government holidays. Participants who believe that they have a good cause
20 for not submitting documents electronically must file an exemption request, in accordance with
21 10 CFR 2.302(g), with their initial paper filing stating why there is good cause for not filing
22 electronically and requesting authorization to continue to submit documents in paper format.
23 Such filings must be submitted by (1) first-class mail addressed to the Office of the Secretary of
24 the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention:
25 Rulemaking and Adjudications Staff, or (2) courier, express mail, or expedited delivery service
26 to the Office of the Secretary, 11555 Rockville Pike, Rockville, MD 20852, Attention:
27 Rulemaking and Adjudications Staff. Participants filing adjudicatory documents in this manner
28 are responsible for serving the document on all other participants. Filing is considered complete
29 by first-class mail as of the time of deposit in the mail, or by courier, express mail, or expedited
30 delivery service upon depositing the document with the provider of the service. A presiding
31 officer, having granted an exemption request from using E-Filing, may require a participant or
32 party to use E-Filing if the presiding officer subsequently determines that the reason for granting
33 the exemption from use of E-Filing no longer exists.

34
35 Documents submitted in adjudicatory proceedings will appear in the NRC's electronic hearing
36 docket, which is available to the public at <https://adams.nrc.gov/ehd>, unless excluded pursuant
37 to an order of the Commission or the presiding officer. If you do not have an NRC-issued digital
38 ID certificate as described above, click "cancel" when the link requests certificates, and you will
39 be automatically directed to the NRC's electronic hearing dockets where you will be able to
40 access any publicly available documents in a particular hearing docket. Participants are asked
41 not to include personal privacy information, such as Social Security numbers, home addresses,
42 or personal phone numbers in their filings, unless an NRC regulation or other law requires
43 submission of such information. For example, in some instances, individuals provide home
44 addresses to demonstrate proximity to a facility or site. With respect to copyrighted works,
45 except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute
46 a Fair Use application, participants are requested not to include copyrighted materials in their
47 submission.

48 Failure on your part to demand a hearing within 20 days constitutes a waiver of your right to
49 demand a hearing and, for the purpose of reapplication under 10 CFR 55.35, renders this letter
50 a notice of final denial of your application, effective as of the date of this letter.

1 If you have any questions, please contact [name] at [telephone number] or by email at [email
2 address].
3

4 Sincerely,
5

6
7 [Division Director with Program Responsibility]
8 Office of Nuclear Reactor Regulation
9

10 Docket No. 55-[number]
11

12 Enclosure: As stated

13 cc w/o enclosure: [senior management facility representative who signed the applicant's NRC
14 Form 398]

15 cc w/enclosure: [Training representative who signed the applicant's NRC Form 398]

6.0 REQUALIFICATION EXAMINATIONS AND OTHER LICENSE ACTIONS

6.1 REQUALIFICATION EXAMINATION ADMINISTRATION

A. Purpose

This standard describes the methods to be used to prepare, conduct, and grade requalification examinations meeting the provisions of 10 CFR 55.59(c)(4) and 10 CFR 55.59(c)(7). The standard can be applied to a facility licensee where all licensed operators have lost proficiency and are no longer in compliance with the requalification program due to an extended shutdown.

This standard also describes the methods to be used to evaluate the facility licensee's requalification program. The standard can be applied to facility licensees when the NRC has lost confidence in the licensee's ability to conduct its own examinations. Situations that could result in a **for cause** requalification examination are significant operator errors, poor requalification inspection results, and allegations of significant training program deficiencies.

B. General

If the standard is being applied following an extended shutdown, the NRC staff will develop the requalification examination. The examination should be based on the NRC-approved requalification program. The examination will consist of a written examination and an operating test. A regularly scheduled biennial written examination may be substituted for the written examination if it meets this standard.

If the standard is being applied **for cause**, if possible, a team of both NRC staff and facility licensee staff should develop requalification examinations. The examination will be based on the NRC-approved requalification program. Simultaneous evaluation of operator performance by the facility licensee and the NRC will allow the NRC to assess both individual and program performance. The examination will consist of a written examination and an operating test. A regularly scheduled biennial written examination may be substituted for the written examination if it meets this standard.

C. Examination Schedule

- (1) At least 90 days before examination administration, the NRC will notify the facility licensee of the decision to administer an NRC requalification examination. When appropriate, the NRC may ask whether the facility licensee has the resources to prepare the written examination, the operating tests, or both. If the facility licensee commits to preparing any part of the examination, the NRC will schedule a site visit to explain the examination process and answer any questions that the facility licensee may have. The NRC will also send the facility a letter in the format of the "Confirmation Letter" in Attachment 1 to this standard.
- (2) At least 60 days before examination administration, the facility licensee will send to the NRC reference material (including its examination bank, if available). The NRC will evaluate the material for adequacy. The facility licensee will identify the following:
 - systems covered during the requalification cycle
 - new or recently modified systems
 - fuel accountability and handling

- building and pre-startup requirements
- experiment handling
- radiation monitoring and control
- other systems and procedures required for the safe operation of the facility

Where appropriate, the facility licensee will also provide a list of operators to be examined and the names of any facility licensee staff assigned to the examination team. The facility licensee staff will provide technical assistance in the development and review of the written examination questions and the operating tests. Normally, the facility licensee staff will act as the facility evaluators during the operating tests.

- (3) At least 30 days before the examination administration date, the facility licensee should provide to the NRC any portions of the requalification examination that it has committed to preparing. The NRC will evaluate the adequacy of the material and any examinations prepared by the facility licensee. Also, the CE will reconfirm the schedule and recommend any changes as necessary. The NRC reserves the right to reschedule the examination if it finds the materials or examinations supplied by the facility licensee to be inadequate.

D. Examination Preparation

1. Written Examination Preparation

The written examination will be a closed reference three-category examination and will be written at the RO knowledge level.

Category A tests the operators' knowledge of reactor theory, thermodynamics, and facility operating characteristics. Category B tests the operators' knowledge of normal, abnormal, and emergency procedures, and administrative controls (including technical specifications, the emergency plan, administrative procedures, and radiological procedures). Category C tests the operators' knowledge of facility systems, with the focus on systems applicable to reactor operations (i.e., process and radiological monitoring).

The examination author should prepare 20 questions per category. Questions should come from the facility's requalification examination bank, with appropriate references. The questions should be objective (i.e., multiple choice or matching).

2. Written Examination Reviews

The entire examination team will review the written examination, evaluating each question for appropriateness, technical accuracy, and clarity. The examination team must repeat this evaluation for any changes made as a result of this review.

3. Operating Test Preparation

The operating test is open reference. Each operator will be evaluated on their ability to complete a minimum of five tasks satisfactorily. The operating tests will differentiate between RO and SRO knowledge levels and abilities. An RO is responsible only for RO tasks; an SRO is responsible for all tasks.

Each operator must be tested on at least four different types of tasks (listed below). The examiner may design the tasks to flow from one to the next, such as having the operator perform a startup as the first task, then while critical, simulate an instrument failure as the second task.

- **Reactivity task:** Tasks that have the operator perform a startup, significant power change, or shutdown.
- **Abnormal event:** Tasks that have the operator respond to an instrument failure, component failure, radiation monitor alarm, or similar problem.
- **Emergency event:** Tasks that have the operator respond to events such as a building evacuation, a large reactor pool leak, high-radiation levels, etc.
- **Outside event:** Tasks that have the operator perform duties outside the control room, such as refueling or surveillance on local radiation monitors.

Additional tasks will be developed at the discretion of the CE.

Each task will include at least two questions to be asked at the completion of the task. Questions may be selected from facility question banks or from previously administered NRC examinations. To the maximum extent possible, the questions should have the following characteristics:

- be based on the task or system being operated
- discriminate between RO and SRO responsibilities, where appropriate
- emphasize knowledge required for task performance or procedure use and compliance

4. Operating Test Review

NRC examiner(s) will evaluate the facility-identified tasks and questions to ensure that the operating test tests knowledge and abilities appropriate for operators at that facility.

The NRC may substitute any or all of the facility-provided tasks and questions with ones selected or developed by the NRC. However, facility-developed tasks and questions should be used unless they fail to meet NRC standards. The CE has the final authority in deciding operating test content.

E. Examination Administration

1. Written Examination

Either an NRC examiner or a facility licensee staff member will proctor the written examination. The proctor will brief the operators using Attachment 1, Enclosure 3. Operators will have 3 hours to complete the written examination.

2. Operating Test

Efforts must be made to avoid compromising the integrity of the operating tests. Operators examined on the same day may all perform the same tasks. Operators examined on subsequent days must perform a minimum of two tasks that were not previously administered, or the operators must complete a postexamination security agreement. The CE may agree to other reasonable precautions.

The preferred method for administering operating tests is to have the facility licensee examination team member(s) act as the facility evaluator(s). The facility evaluator(s) should conduct the examination with the NRC examiner observing. If the facility licensee cannot supply

1 a facility evaluator, the NRC examiner will administer the operating tests. NRC examiners may
2 directly ask the operator follow-up questions after task completion. However, to the extent
3 possible, these questions will be asked through the facility evaluator.

4
5 The facility evaluator will brief the operator to be tested using the “Briefing Checklist”
6 (Attachment 2). If desired, the operators may be briefed as a group before the start of the
7 operating tests.

8
9 Immediately after the operator completes a task, the facility evaluator will ask the two
10 pre-scripted questions associated with the task. The facility evaluator may ask additional
11 questions for clarification or verification of the tasks performed. The questions should not
12 expand the scope of the pre-scripted questions.

13
14 The NRC examiner should review any additional questions asked with the facility evaluator as
15 soon as possible after the tasks are completed.

16
17 Normally, the facility evaluator will observe task performance passively. The facility evaluator
18 should not ask questions or present the next task while the operator is making console control
19 manipulations. New tasks should be presented when the facility is in a steady-state condition.

20
21 The NRC examiner will ensure that the facility evaluator appropriately conducts the operating
22 tests. If the NRC examiner determines that an operating test is inadequate to make a pass/fail
23 determination, the NRC examiner will discuss this concern with the facility evaluator. If the
24 facility evaluator’s conduct of the tests continues to be unsatisfactory, the NRC examiner may
25 choose to conduct the remainder of the tests with the facility evaluator grading in parallel. If this
26 option is chosen, the CE will be informed at the completion of the individual operating test. As
27 soon as possible after such issues arise, the CE will resolve with facility licensee
28 representatives all unforeseen technical questions or issues that could result in an operator
29 failing the operating test.

30 31 **F. Examination Grading**

32 33 **1. Written Examination**

34
35 The facility licensee and NRC evaluators will grade the written examinations independently.
36 Grading should be completed within 5 workdays of examination administration. They will record
37 the grades on Form ES-6.1-2, “Examination Cover Sheet.”

38
39 Each operator must achieve a score of at least 70 percent overall as graded by the NRC to pass
40 the written examination. A score of less than 70 percent on one category is not a failure but
41 indicates an area requiring remedial action by the facility licensee.

42
43 If a regularly scheduled biennial written examination is substituted, the NRC staff should review
44 the examination and grading to ensure that it meets this standard.

45 46 **2. Operating Test**

- 47 a. Deficiencies will be recorded using Form ES-6.1-1, “Requalification Examination
48 Operating Test Record.” Typically, significant deficiencies will be associated with critical
49 steps. Critical steps are those steps that, when not performed correctly, in the proper
50 sequence, or at the proper time, will prevent the system from functioning properly or
51 preclude successful completion of the task. Additional critical steps for a task may be

identified because of unanticipated operator actions. These will be identified and conflicts resolved in the same manner as the original critical steps (see paragraph D.4).

- b. If an operator incorrectly performs or fails to perform a critical step, the task may be graded as unsatisfactory if the deficiency jeopardizes the safety of the facility or has a significant safety impact on the public. Failure to perform, or incorrect performance of, two or more critical steps will result in failure of the task.
- c. Each operator must successfully complete at least 70 percent of the tasks and correctly answer at least 70 percent of the pre-scripted task questions to pass the test.
- d. The NRC will notify the facility licensee immediately of any operator whose performance requires immediate removal from licensed duties.

G. Regualification Program Evaluation

The NRC will evaluate the facility requalification program for any deficiencies or weaknesses based on written examination and operating test adequacy and operator performance. The wide variance in staff sizes and the small number of operators that will typically be examined precludes performing a statistical evaluation of the program. However, if the NRC notes any of the following items during the examination and tests, it will consider a subsequent evaluation of the program:

- (1) More than 50 percent of the operators fail the examination (when four or more operators are evaluated).
- (2) Facility licensee staff grading results in more than one candidate passing the examination that the NRC staff believed should have failed (e.g., disagreement on the pass/fail results).
- (3) The facility evaluator is unable to administer a satisfactory operating test (e.g., leads the operator, cues by providing answers, or performs steps for the operator).

H. Actions for Regualification Program Deficiencies

The NRC will consider the following actions for any facility requalification program deficiencies:

- (1) Request that the facility licensee review program deficiencies and identify corrective actions to improve operator performance.
- (2) Meet with senior facility licensee management to review program deficiencies, determine root causes, propose corrective actions, and develop a schedule for implementing corrective actions and follow-up inspections and examinations.
- (3) Determine the following:
 - a. the significance of generic deficiencies identified during the program evaluation
 - b. how recent facility events relate to licensed operator performance
- (4) Develop NRC recommendations.

Additional actions may be taken at the discretion of the Director of the Office of Nuclear Reactor Regulation or the Director's designee.

1
2 **I. Final Regualification Program Evaluation Report**
3

4 A final Form ES-6.1-3, "Research and Test Reactor Regualification Results Summary Sheet,"
5 will be prepared when the grading of requalification examinations has been completed. A
6 complete copy of the report will be filed in the facility examination file.
7

8 **J. Individual Regualification Examination Report**
9

10 Form ES-6.1-4, "Individual Regualification Examination Report," is filled out for each operator
11 that received an NRC requalification examination. This report (original) is filed in the operator's
12 electronic docket folder, with a copy sent to the facility licensee and a copy filed in the facility
13 examination file.
14

15 **K. Record Retention**
16

17 (1) When the requalification evaluation has been completed, the facility licensee will receive
18 a copy of all NRC-administered written examinations and operating tests.
19

20 (2) Material related to an examination will be retained as necessary. This includes the
21 following:
22

- 23 a. examination cover page for all examinations
- 24 b. the portions of the examination that resulted in failure
- 25

26 (3) Examination Security
27

28 To ensure examination security, the facility licensee staff will be asked to follow
29 examination security restrictions. These restrictions begin with the first review of the
30 examination and continue until the examination is concluded. Each facility licensee staff
31 member will be required to sign the "Preexamination Security Agreement"
32 (Attachment 1, Enclosure 4) before reviewing the actual examination and the
33 "Postexamination Security Agreement" at the conclusion of the examination process
34 (Attachment 1, Enclosure 4).

35 **L. Attachments/Forms**
36

37 Attachment 1, "Confirmation Letter"
38 Attachment 2, "Briefing Checklist—Operating Test Tasks"
39 Form ES-6.1-1, "Requalification Examination Operating Test Record"
40 Form ES-6.1-2, "Examination Cover Sheet"
41 Form ES-6.1-3, "Research and Test Reactor Regualification Results Summary Sheet"
42 Form ES-6.1-4, "Individual Regualification Examination Report"

**ATTACHMENT 1
CONFIRMATION LETTER**

[NRC Letterhead]
[Date]

[Name, Title]
[Street Address]
[City, State Zip Code]

SUBJECT: EXAMINATION CONFIRMATION LETTER, 50-[NUMBER]/OL-YY-NN,
[FACILITY NAME]

Dear [Name]:

This letter confirms arrangements [I or examiner name] have made with [you or facility contact] for the administration of requalification examinations at the [facility]. The written examination and operating tests, scheduled for the week of [date], will be performed according to Examination Standard 6.1 in NUREG-1478, Revision 3, "Operator Licensing Examiner Standards for Research and Test Reactors." You should have a copy of this standard.

Please furnish the material listed in Enclosure 1, "Reference Material Requirements," at least 60 days before the examination date to the following address:

ATTN: [Chief Examiner]
[Appropriate Mail Stop]
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Failure to supply the reference material may result in a postponement of the examination. You may volunteer to submit a written examination and/or operating test for use during the examination week in addition to the material requirements of Enclosure 1. Submission of a written examination and/or operating test is optional. However, if you do submit a written examination and/or operating test, those personnel who developed it will be subject to the security restrictions described below.

Facility licensees can submit reference material either electronically or in hard copy. All procedures and reference materials should contain appropriate indices or tables of contents so that they can be used efficiently, and a master table of contents should be provided for all materials sent. Also, all electronic documents should be text searchable. Failure to provide complete and indexed or text searchable reference materials may prompt the U.S. Nuclear Regulatory Commission (NRC) to return the materials to the person at the highest level of corporate management responsible for reactor operations. The NRC will include a cover letter with the returned reference materials explaining the deficiencies in the materials and the basis for postponing or canceling the examinations, as appropriate.

The facility licensee should provide at least one employee to complete the examination team. These employees should be licensed or previously licensed senior reactor operators at your facility or a similar facility. These individuals must not be scheduled for an examination administered by the NRC during this visit. These facility licensee representative(s) must sign a security agreement (Enclosure 4).

1 The facility licensee representative(s) may continue to train operators with the understanding
2 that they will not describe details of the examination, either in scope or content. Should
3 questions arise that are on the examination, the facility licensee representatives may answer
4 them provided that they give no indication that the question is on the examination.

5
6 You are responsible for providing adequate accommodations to properly conduct the
7 examinations. Enclosure 2, "Administration of Requalification Examinations," describes NRC
8 requirements for conducting the examinations. Enclosure 3 contains the "NRC Rules and
9 Guidance for Examinees" that will be in effect during the administration of the written
10 examination. You are responsible for ensuring that all operators are aware of these rules.

11 12 **Paperwork Reduction Act Statement**

13
14 This letter contains information collection requirements that are subject to the Paperwork
15 Reduction Act of 1995 (44 U.S.C. 3501 et seq.). These information collections were approved
16 by the Office of Management and Budget (OMB), approval numbers 3150-0018, 3150-0024,
17 and 3150-0090. The burden to the public for these mandatory information collections is
18 estimated to average 7.45 hours per combined response for completing the information
19 collections. Send comments regarding this burden estimate or any other aspect of these
20 information collections, including suggestions for reducing the burden, to the Records and
21 Freedom of Information Act/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory
22 Commission, Washington, DC 20555-0001, or by email to Infocollects.Resource@nrc.gov; and
23 to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0018),
24 Office of Management and Budget, Washington, DC 20503. The NRC may not conduct or
25 sponsor, and a person is not required to respond to, a request for information or an information
26 collection requirement unless the requesting document displays a currently valid OMB control
27 number.

28
29 If you have any questions on the examination process, please contact me at [telephone] or by
30 email at [email address]

31
32 Sincerely,

33
34
35 [Appropriate Branch Chief or Program Director or Above]
36 [Appropriate Branch]
37 [Appropriate Division]
38 Office of Nuclear Reactor Regulation
39

40 Docket No. 50-[number]

41 42 Enclosures:

- 43 1. Reference Material Requirements
- 44 2. Administration of Requalification Examinations
- 45 3. NRC Rules and Guidance for Examinees
- 46 4. Security Agreements

47
48 cc w/enclosures:

49 [Name], Reactor Supervisor

ENCLOSURE 1 REFERENCE MATERIAL REQUIREMENTS

Test items to support all aspects of the requalification examination must be provided to the U.S. Nuclear Regulatory Commission (NRC) 60 days before the examination date. These may include the following:

- (1) Existing learning objectives, student handouts, and lesson plans (including training manuals, facility orientation manual, system descriptions, reactor theory, and thermodynamics principles).

Training materials should include all substantive written material used for the requalification training of reactor operators (ROs) and senior reactor operators (SROs). The written material should include learning objectives, if available, and the details presented during lectures, rather than outlines. Training materials should be identified, bound, and indexed. If hard copy material or electronic media that do not allow copy/paste from the reference to the written examination are provided, examination development may take longer and thereby result in schedule delays. Training materials that include the following should be provided:

- System descriptions including those for all operationally relevant flowpaths, components, controls, and instrumentation. System training material should draw parallels to the actual procedures used for operating and to the applicable system.
- Complete and operationally useful descriptions of all safety system interactions and secondary 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.

- (2) Complete procedure index (including temporary procedures).

- (3) All administrative procedures applicable to reactor operation or safety.

- (4) All integrated facility procedures, normal or general operating procedures, and procedures for experiments.

- (5) All emergency procedures, emergency instructions, and abnormal or special procedures.

- (6) Standing orders or procedures changed by reactor supervision and important orders or changes that are safety related and may supersede the regular procedures.

- (7) Applicable procedures (procedures that are run frequently).

- (8) Fuel-handling and core-loading procedures and initial core-loading procedures, when appropriate.

- (9) Any annunciator or alarm procedures, as applicable.

- (10) Radiation protection manual and radiation control manual or procedures.

- (11) Emergency plan and any emergency plan implementing procedures.
- (12) Technical specifications and interpretations, if available.
- (13) System operating procedures, including experiments.
- (14) Piping and instrumentation diagrams, electrical single-line diagrams, or flow diagrams, as applicable.
- (15) Technical data book, facility curve information, or both as used by operators and facility precautions, limitations, and setpoints.
- (16) Questions and answers specific to the facility training program, which may be used in the written examination or operating test (if voluntarily provided by facility licensee).
- (17) Additional material as requested by the examiners to develop examinations that meet regulations and the operator licensing examiner standards for research and test reactors.

The above reference material should be the approved final issuances and marked as such. If a facility licensee has not finalized some of the material, then the chief examiner should verify with the facility licensee that the most complete, up-to-date materials are available and reach an agreement with the facility licensee on limiting changes before the administration of the examination.

ENCLOSURE 2
ADMINISTRATION OF REQUALIFICATION EXAMINATIONS

- (1) The facility licensee shall provide a single room for the written examination. The location of this room and supporting restroom facilities shall be chosen to minimize contact with other facility personnel for the duration of the examination.
- (2) The chief examiner (CE) will ascertain that the facility provides the minimum spacing required to ensure examination integrity. Minimum spacing consists of one examinee per table and a 3-foot space between tables. No wall charts, models, or other training materials shall be present in the examination room, unless with CE approval.
- (3) The CE will provide reference material as needed for the examination.
- (4) An attempt will be made to distinguish between reactor operator and senior reactor operator knowledge and abilities to the extent that the facility training materials support such a distinction.
- (5) Prudent scheduling of the activities for examination week is important to help alleviate undue stress on the operators. Your training staff and the CE should work very closely in formulating a schedule that does not result in excessive delays of individuals being administered their examination.

ENCLOSURE 3
NRC RULES AND GUIDANCE FOR EXAMINEES

- (1) Examinees may bring pens, pencils, and calculators into the examination room. Black ink or dark pencils should be used for writing answers to questions. An examiner must verify that calculators that have memory or storage capacity are cleared or empty before the examination. Examinees shall not bring tablets, cell phones, or other communications or electronic devices or recorders into the examination room.
- (2) Print your name in the blank provided on the cover sheet of the examination.
- (3) Fill in the date on the cover sheet of the examination, if necessary.
- (4) Answer each question on the answer sheets.
- (5) The point value for each question is indicated in parentheses after the question.
- (6) If the intent of parts of the examination is not clear, ask questions of the proctor only.
- (7) You must sign the statement on the cover sheet that indicates that the work on the examination is your own and that you have not received or given any assistance in completing the examination. This must be signed **after** the examination has been completed.
- (8) Only restroom trips are allowed and limited to only one examinee at a time. You must have no contact with anyone outside the examination room to avoid even the appearance of examination compromise. No conversation with other individuals or other stops are allowed.
- (9) Cheating on the examination will result in a revocation of your license and could result in more severe penalties.
- (10) Each category of the examination is designed to take approximately 60 minutes to complete. You will have 3 hours to complete the examination.
- (11) When you are finished and have turned in your completed examination, leave the examination area. If you are observed in this area while the examination is still in progress, your license may be revoked.

ENCLOSURE 4
SECURITY AGREEMENTS

PREEXAMINATION SECURITY AGREEMENT

I _____ agree that I will not knowingly divulge any information
concerning the requalification examination for _____ to any
unauthorized persons.

_____/_____
Signature Date

POSTEXAMINATION SECURITY AGREEMENT

I _____ did not, to the best of my knowledge, divulge any information
concerning the examination administered on _____ to any unauthorized
persons.

_____/_____
Signature Date

ATTACHMENT 2
BRIEFING CHECKLIST—OPERATING TEST TASKS

- (1) The U.S. Nuclear Regulatory Commission (NRC) examiner is a visitor; the facility licensee is responsible for providing an escort to ensure compliance with safety, security, and radiation protection procedures.
- (2) Do not operate facility equipment unless **specifically allowed** by procedure, standing order, management direction, routine operating procedures, or other administrative allowances. If equipment operation is specifically prohibited, nothing the NRC examiner or I say or ask will be intended to violate that principle.
- (3) Do not hesitate to ask for clarification during the walkthrough. You may request that the NRC examiner or I reword or clarify the question.
- (4) We will be taking notes throughout the test to document your performance. Frequently, we will stop questioning for this purpose. The amount of note-taking does not reflect your level of performance. The NRC examiner must document satisfactory as well as less than satisfactory performance.
- (5) The operating test is considered “open reference.” The reference material in the facility/control room that is normally available to operators is available during the test. This includes calibration curves, previous log entries, piping and instrument diagrams, calculation sheets, and procedures. However, operators are responsible for knowing from memory the immediate actions of emergency and other procedures as appropriate to the facility.
- (6) The operating test has been planned to last approximately 90 minutes. However, there is no specific time limit. The NRC examiner and I will take whatever time is necessary to cover the areas selected, in the depth and scope required. The test will evaluate a minimum of five tasks.
- (7) The NRC examiner and I will explain the tasks to be completed and which steps to simulate or discuss and will provide initial conditions. The operator is to proceed with completing the task as if directed by facility procedures, shift supervision, or both. During the task, the NRC examiner will supply the necessary facility conditions and parameters needed to simulate the task. The operator should explain each step of the task before doing it.
- (8) The NRC examiner is not allowed to reveal the results of the examination at its conclusion.
- (9) The NRC examiner may ask clarifying questions of the operator at the end of each task. To the extent possible and reasonable, these questions will be asked via the facility evaluator.
- (10) The NRC examiner will indicate to the operator that no aspects of the examination should be discussed with anyone until the conclusion of the examination.
- (11) You may request a break at any time during the operating test.
- (12) During the operating test you will be evaluated for your actions as you are the watchstander. Please operate the reactor as the watchstander, with the exception that

1 you should announce your actions, then pause momentarily to give the NRC examiner
2 time to correct you or stop you, if necessary, before you actually perform the action. In
3 addition, you will be observed to ensure that you meet all conditions of your license (e.g.,
4 wearing corrective lenses to perform licensed duties).

PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY
FORM ES-6.1-1
REQUALIFICATION EXAMINATION OPERATING TEST RECORD

Name: _____ License Number _____

	Critical Steps Number/Correct	Oral Questions Number/Correct
--	----------------------------------	----------------------------------

Control Console Reactivity

Procedure No.: _____

Title: _____

_____ / _____	_____ / _____
---------------	---------------

Response to Abnormal Event

Procedure No.: _____

Title: _____

_____ / _____	_____ / _____
---------------	---------------

Response to Emergency

Procedure No.: _____

Title: _____

_____ / _____	_____ / _____
---------------	---------------

In-Facility Evolution

Procedure No.: _____

Title: _____

_____ / _____	_____ / _____
---------------	---------------

Any Task

Procedure No.: _____

Title: _____

_____ / _____	_____ / _____
---------------	---------------

Totals

_____ / _____	_____ / _____
---------------	---------------

Percentage

_____	_____
-------	-------

Overall Evaluation: _____ Satisfactory $\geq 70\%$ $\geq 70\%$

_____ Unsatisfactory

Facility Examiner _____ Date _____

NRC Chief Examiner _____ Date _____

PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY

1 **PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY**

2
3 **FORM ES-6.1-2**
4 **EXAMINATION COVER SHEET**

5
6 U.S. NUCLEAR REGULATORY COMMISSION
7 RESEARCH AND TEST REACTOR REQUALIFICATION EXAMINATION
8

9 FACILITY:

10 REACTOR TYPE:

11 DATE ADMINISTERED:

12 CANDIDATE: _____
13
14

15
16
17 **INSTRUCTIONS TO CANDIDATE:**
18

19 Answers are to be written on the answer sheets provided. Attach all answer sheets to the
20 examination. Points for each question are indicated in parentheses after each question. A score
21 of 70 percent or greater overall is required to pass the examination.
22

23 Examinations will be collected 3 hours after the examination starts.
24

25				% OF	
26	CATEGORY	% OF	CANDIDATE'S	CATEGORY	
27	VALUE	TOTAL	SCORE	VALUE	CATEGORY
28					
29	20.00	33.33	_____	_____	A. REACTOR THEORY,
30					THERMODYNAMICS, AND
31					FACILITY OPERATING
32					CHARACTERISTICS
33					
34	20.00	33.33	_____	_____	B. NORMAL AND EMERGENCY
35					PROCEDURES
36					AND RADIOLOGICAL CONTROLS
37					
38	20.00	33.33	_____	_____	C. FACILITY AND RADIATION
39					MONITORING
40					SYSTEMS
41					
42	60.00	100.00	_____	_____ %	FINAL GRADE
43					

44 All work done on this examination is my own. I have neither given nor received aid.
45

46 _____
47 Candidate's Signature
48

49 **PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY**

[illegible]

PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY
FORM ES-6.1-4
INDIVIDUAL REQUALIFICATION EXAMINATION REPORT

FACILITY:	EXAMINEE'S NAME:	
DOCKET NO. 55-	LICENSE NO.:	EXPIRATION DATE:
EXAM TYPE: RO/SRO	RETAKE EXAM: 1ST/2ND/NO	DATE OF LAST EXAM (RETAKE):

EXAM SUMMARY		
WRITTEN EXAM RESULTS		
DATE OF EXAM:	NRC EXAMINER (PRINT):	FACILITY EXAMINER (PRINT):
	NRC GRADING	FACILITY GRADING
CATEGORY A (POINTS)	OF %	OF %
CATEGORY B (POINTS)	OF %	OF %
CATEGORY C (POINTS)	OF %	OF %
OVERALL SCORE	%	%

OPERATING		
DATE OF EXAM:	NRC EXAMINER (PRINT):	FACILITY EXAMINER (PRINT):
NO. CORRECT TASKS	OF %	OF %
NO. QUES. CORRECT	OF %	OF %

NRC EXAMINER RECOMMENDATIONS		
CATEGORY	RESULTS	SIGNATURE
WRITTEN	PASS/FAIL	
OPERATING	PASS/FAIL	

PEER EXAMINER REVIEW		
PASS/FAIL	SIGNATURE:	DATE:

BRANCH CHIEF REVIEW		
PASS/FAIL	SIGNATURE:	DATE:

PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY

6.2 REQUALIFICATION FAILURES—REVIEWS AND HEARINGS

A. Purpose

The NRC staff should use these procedures to process requests for NRC staff reviews and demands for hearing by 10 CFR Part 55 licensees concerning failures of NRC-conducted requalification examinations.

B. Results of NRC-Conducted Requalification Examinations

1. Passing an NRC-Conducted Requalification Examination

The BC will inform all operators who pass all portions of the requalification examination in a letter in the format of Attachment 1 to this standard.

2. Failure of Written Examination Category(s)

If an operator failed one or two written examination categories but received an overall grade of 70 percent or better, the facility licensee will determine the appropriate corrective action and retest the operator on the failed category (s). No further NRC involvement is necessary.

3. Failing an NRC-Conducted Requalification Examination

- a. If an operator fails any part of an NRC-conducted requalification examination, the facility licensee must remove that operator from licensed duty. The facility licensee must take corrective action consistent with the provisions of its requalification program before returning the operator to licensed duty.
- b. The BC will inform the operator of their failure in a letter in the format of Attachment 2 or Attachment 3 to this standard, as appropriate. The operator then has 20 days to request an NRC staff review of the failed portion of the examination. The operator may submit this request to the appropriate division director, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Note 5 in Section E provides additional information on the requirements for supporting documentation.
- c. NRC involvement may include conducting a retest according to this NUREG, inspecting the facility licensee as it retests the operator, or reviewing an examination prepared by the facility licensee. The BC will determine the appropriate level of involvement depending on the quality of the facility licensee's program.
- d. The NRC will normally conduct a second (first retake) examination approximately 6 months after issuing the first failure notification according to Section C.3.b and will concentrate on the areas in which the operator exhibited deficiencies.
- e. The NRC will conduct a third (second retake) examination approximately 6 months after issuing a second failure notification according to Section C.3.b. The third examination will be a **comprehensive** requalification examination.

If an operator fails a third requalification examination, the NRC will review the operator's performance and the facility licensee's training program. A third failure may be grounds for suspending or revoking the operator's license. Notification of the operator will be handled on a case-by-case basis and coordinated through the BC.

1 **C. Overturning Requalification Examinations**

2
3 If an NRC staff review results in changes such that the staff reverses its decision on the failure
4 of the requalification examination, the staff will use a letter similar in format to the letter in
5 Attachment 1 to inform the operator that they have passed the examination.
6

7 Upon the completion of an NRC staff review, the applicant may file a demand for a hearing.
8

9 **D. Notes**

- 10
11 (1) A notice of denial or examination failure must be signed by NRC management (BC or
12 higher). In the case of a request for NRC staff review or a demand for a hearing, a copy
13 of the division's correspondence will be distributed to the BC for tracking purposes and
14 to provide substantive information supporting the decision.
15
16 (2) The NRC should send all correspondence related to this process to the individual
17 licensee by mail with return receipt requested and/or email.
18
19 (3) Asking the facility licensee to reassess its need for the operator to perform assigned
20 duties is inappropriate while conducting an NRC staff review or a hearing.
21
22 (4) Requests for NRC staff review must (a) list the items for which additional review is being
23 requested and (b) include documentation supporting the contentions made by the
24 individual licensee. The package containing the supporting documentation for the review
25 and the review request must be mailed or delivered to the applicable division director
26 within 20 days of the date of the notice of denial or examination failure. The division staff
27 should complete the review within 45 days of receiving the package. The staff will review
28 requests using the guidance in ES 5.2.
29

30 **E. Attachments/Forms**

- 31
32 Attachment 1, "Requalification Examination Pass Letter"
33 Attachment 2, "Requalification Examination Failure Letter"
34 Attachment 3, "Requalification Examination Second Failure Letter"

ATTACHMENT 1
REQUALIFICATION EXAMINATION PASS LETTER

[NRC Letterhead]

[Date]

Docket No. 55-[Number]

[Applicant Name]

[Street Address]

[City, State Zip Code]

Dear [Name]:

I am writing to inform you that you passed the requalification written examination and operating test conducted by the U.S. Nuclear Regulatory Commission on [date]. Enclosed is a copy of your "Individual Requalification Examination Report" (Form ES-6.1-5) summarizing the results of your examination. Your facility training department has a copy of the master answer key.

If you have any questions, please contact [name] at [telephone number] or by email at [email address].

Sincerely,

[BC or higher]

Enclosure:

As stated

cc: [senior management facility representative who signs NRC Form 398]

ATTACHMENT 2
REQUALIFICATION EXAMINATION FAILURE LETTER

[NRC Letterhead]

[Date]

Docket No. 55-[Number]

[Applicant Name]

[Street Address]

[City, State Zip Code]

Dear [Name]:

I am writing to inform you that you did not achieve an acceptable score on the requalification [written examination, operating test, or written examination and operating test] conducted by the U.S. Nuclear Regulatory Commission (NRC) on [date]. Enclosed is a copy of the results indicating the area(s) in which you exhibited deficiencies. Your facility training department has a copy of the master answer key.

This failure places you in the same status as if you had failed a facility-conducted requalification examination. Therefore, you are subject to the requirements set forth in the NRC-approved requalification program for the facility for which you are licensed and must meet those requirements before resuming licensed duties. The NRC will conduct a second requalification examination in the areas in which you exhibited deficiencies.

If you believe an error was made in grading your examination, you may request within 20 days of the date of this letter that the NRC staff review the grading of your examination. Requests for NRC staff review should be sent to the [appropriate division director], U.S. Nuclear Regulatory Commission, Washington, DC 20555. Your request must identify the portions of your examination that you believe were graded incorrectly or too severely. In addition, you must provide the basis, including supporting documentation (such as procedures, instructions, computer printouts, and chart traces), in as much detail as possible, to support your contention that certain of your responses were graded incorrectly or too severely.

If you have any questions, please contact [name] at [telephone number] or by email at [email address].

Sincerely,

[BC or higher]

Enclosure:

As stated

cc: [senior management facility representative who signs NRC Form 398]

ATTACHMENT 3
REQUALIFICATION EXAMINATION SECOND FAILURE LETTER

[NRC Letterhead]
[Date]

Docket No. 55-[Number]

[Applicant Name]
[Street Address]
[City, State Zip Code]

Dear [Name]:

I am writing to inform you that you did not achieve an acceptable score on the requalification [written examination, operating test, or written examination and operating test] conducted by the U.S. Nuclear Regulatory Commission (NRC) on [date]. Enclosed is a copy of the results indicating the area(s) in which you exhibited deficiencies. Your facility training department has a copy of the master answer key.

This failure places you in the same status as if you had failed a facility-conducted requalification examination. Therefore, you are subject to the requirements set forth in the NRC-approved requalification program for the facility for which you are licensed and must meet those requirements before resuming licensed duties. The NRC will conduct a third requalification examination that will be comprehensive in scope.

If you believe an error was made in grading your examination, you may request within 20 days of the date of this letter that the NRC staff review the grading of your examination. Requests for NRC staff review should be sent to the [appropriate division director], U.S. Nuclear Regulatory Commission, Washington, DC 20555. Your request must identify the portions of your examination that you believe were graded incorrectly or too severely. In addition, you must provide the basis, including supporting documentation (such as procedures, instructions, computer printouts, and chart traces), in as much detail as possible, to support your contention that certain of your responses were graded incorrectly or too severely.

If you have any questions, please contact [name] at [telephone number] or by email at [email address].

Sincerely,

[BC or higher]

Enclosure:
As stated

cc: [senior management facility representative who signs NRC Form 398]

7.0 FUEL-HANDLING EXAMINATIONS

7.1 SRO LIMITED TO FUEL HANDLING—EXAMINATIONS

A. Purpose

This standard gives guidelines and instructions for preadministration activities in support of SRO limited to fuel handling (LSRO) examinations at non-power reactors that have been permanently shut down or are shut down for extended periods of time (with the fuel to be removed from the facility). This standard supplements the guidance in ES 2.1, ES 2.2, and ES 2.3 for administering examinations.

B. Examination Coordination

The CE will schedule a specific examination date with the facility licensee staff. Normally, examiners will administer all examinations in 1 week, giving the written examination before administering the operating tests.

At least 3 months before the examination week, the CE will confirm the date of the examination and the number of candidates to be examined. The CE should use ES 2.1, Attachment 1, "Sample Examination Confirmation Letter," as a guide and discuss the following:

- (1) the need to have the reference materials identified in Attachment 1 at least 60 days before the scheduled examination date
- (2) the guidelines for review and administration of the written examination (Enclosures 1, 2, 3, and 4 in Attachment 1)
- (3) the requirements (10 CFR 55.31) and guidelines (Attachment 1) for submitting the license applications

The CE will normally issue a letter confirming these arrangements about 90 days before the examination begins. This letter should be addressed to the person at the highest level of management responsible for facility operations. Attachment 1 to ES 2.1 is an example of such a letter. The CE may modify the wording as necessary to reflect the situation. The assignment of examiners should follow the guidelines of ES 2.1, Section D.

If the examination must be rescheduled on short notice, the CE should change the date to reduce the effect on other examinations scheduled. An examiner who fails an applicant on an operating test may not administer that candidate's retake operating test.

For facility-administered LSRO examinations, the facility licensee will schedule a specific examination date and ensure that an NRC examiner is available to observe.

C. Eligibility

The duties and responsibilities associated with maintaining the facility after it is permanently shutdown or shutdown for extended periods of time (with the fuel to be removed from the

1 facility) are much less than those associated with an operating reactor. Therefore, the eligibility
2 requirements for an LSRO are less than those for an SRO at an operating reactor.

3
4 (1) Education

5
6 The educational requirements are the same as described in ES 2.2, Section E.

7
8 (2) Training

9
10 The applicant must satisfactorily complete a training program covering fuel-handling
11 operations. The program should include instruction in the following areas:

- 12
13 a. health physics fundamentals and the principles of reactor theory and
14 thermodynamics
15
16 b. design features of fuel-handling and storage activities and conditions, including
17 facility systems and equipment associated with fuel-handling operations,
18 pertinent instrumentation, and control systems
19
20 c. use of systems to control or mitigate an accident in which the fuel is damaged
21
22 d. administrative, operational, surveillance, emergency, radiation control, security,
23 and safety procedures for fuel handling and storage
24

25 In addition, where applicable, the applicant should have actively participated in at least
26 one fuel-handling evolution (this can be a dummy fuel movement) at the site for which
27 the license is sought or at a similar facility. The applicant should also complete a
28 minimum of 10 hours of on-the-job training in fuel-moving activities, including
29 manipulation of the refueling equipment, where applicable.

30
31 Persons who have either RO or SRO licenses at the time the reactor is shut down will
32 have their licenses reissued as LSRO licenses.
33

34 **D. Reviewing LSRO Initial License Applications**

35
36 The CE should refer to the regulatory requirements in 10 CFR Part 55, Subpart D:

- 37
38 (1) Each applicant must complete and submit an NRC Form 398 and an NRC Form 396.
39 (Computer-generated duplicates are acceptable.) An application is not complete until
40 both forms are filled out, signed by the appropriate personnel, and signed by the NRC.
41
42 Detailed instructions for completing NRC Form 398 and NRC Form 396 accompany the
43 forms.
44
45 (2) The facility licensee's senior management representative must certify that the applicant
46 has successfully completed the required training on NRC Form 398. They should submit
47 the completed form to the applicable BC at least 20 days before the examination date.
48
49 (3) The CE will review the applications against the eligibility requirements described in this
50 standard, process the medical certifications and any waiver requests (refer to ES 2.3),
51 and request any additional information that may be necessary.

(4) If the CE decides that an application does not meet the requirements of 10 CFR Part 55, Subpart D, as clarified by this standard, they will note the deficiencies and ask the facility licensee to supply additional information. If the CE decides that the applicant still does not meet the eligibility requirements, the BC will notify the applicant in writing that the application is being denied and inform the applicant of the deficiencies on which the denial is based (see ES 2.2, Attachment 1).

In addition, the CE will check the *Does Not Meet Requirements* block at the bottom of the application and sign and date the form. An applicant will not be permitted to take a licensing examination until meeting the eligibility requirements.

If the applicant does not accept the denial, the applicant may ask for an NRC staff review or may demand a hearing according to 10 CFR 2.103(b)(2). Further action will be taken according to ES 5.2.

E. Medical Requirements

See ES 2.2, Section C.

F. NRC Form 398

Each applicant must submit an NRC Form 398. The form must be completely filled out per the instructions and signed by the appropriate personnel. Those categories or items that are not applicable to operators at non-power reactors that have ceased operations will be marked "NA."

G. Excusals and Waivers

See ES 2.3, Section D.

H. Attachments/Forms

See ES 2.1, Attachment 1, "Sample Examination Confirmation Letter."

See ES 2.2, Attachment 1, "Sample Initial Application Denial."

7.2 SRO LIMITED TO FUEL HANDLING—EXAMINATION PREPARATION

A. Purpose

This standard specifies guidelines and instructions for preparing LSRO examinations. This standard supplements guidance in ES 3.1, ES 3.3, ES 4.1, ES 4.2, and ES 4.3 for administering initial examinations.

The term “examiner” as used in this standard refers to either facility-licensee staff or NRC staff who prepare LSRO examinations. When necessary to distinguish between the two, “facility examiner” or “NRC examiner” is used.

B. Scope

The NRC’s LSRO examination comprises a written examination and an operating test. This standard includes the requirements for the preparation of these examinations and tests.

C. General Guidelines

- (1) The LSRO examination will consist of both a written examination and an operating test. Applicants must pass both to obtain a license. The written examination and operating test will be administered as described in this standard. If the facility licensee has a refueling simulator, or dummy fuel elements, the examiner should use them to the maximum extent possible.
- (2) Examinations will be documented using the same approval chain as examinations in ES 2.2 and will use Form ES-7.2-1, “Senior Reactor Operator Limited to Fuel Handling Operator Licensing Individual Examination Report,” included in this standard. Form ES-7.2-2, “Research and Test Reactor Examination Results Summary Sheet, Senior Reactor Operator Limited to Fuel Handling,” will be used to list the results (nonpublic).
- (3) If an applicant applies for a license on multiple units at a site, the examiner should ensure comprehensive coverage for all of the applicable units.

D. Written Examination Instructions

1. Content and Preparation

LSRO written examinations should consist of questions totaling 20 points and should be constructed so that a competent applicant can complete the examination in 1 hour.

The written examination will contain questions covering the items specified in 10 CFR 55.41 and 10 CFR 55.43 as they relate to the shutdown reactor.

If the reference material supplied by the facility licensee does not enable the examiner to construct a balanced examination, the examiner should contact the facility licensee to obtain additional material.

2. Quality Assurance Review

The written examination should meet all the guidelines and requirements for test question construction, quality assurance, and facility licensee reviews specified in ES 4.1.

3. Administration

The written examination should be administered according to ES 4.2, except that the time limit to complete the examination is 1 hour. The applicant must receive a grade of at least 70 percent to pass the written examination.

E. Operating Test Instructions

The operating test should be performance based. The facility licensee, whenever feasible, should be encouraged to permit the actual use of equipment to handle dummy fuel elements, assemblies, or modules during the operating test. This may require careful coordination with the facility licensee.

The examiner will assess the applicant's ability to execute normal, abnormal, and emergency procedures associated with fuel handling. Each applicant will be required to simulate or perform tasks related to fuel handling and to answer questions associated with refueling equipment and associated systems. The operating test will also determine whether the applicant can supervise the operation of equipment and systems to conduct fuel-handling operations safely.

1. Administrative Topics (Category A)

Category A covers topics divided into three groups associated with the administrative control of the facility. The examiner must cover the minimum number of subjects from each group as shown on page 2 of Form ES-7.2-1. Selection of subjects is at the discretion of the examiner. To evaluate varied subjects with different applicants, the examiner should be familiar with all of the subjects.

In developing Category A questions, the examiner may use previously developed questions from either an NRC or facility examination bank or may develop new open-reference questions. In any case, the questions asked should be pre-scripted to the maximum extent possible. For facility-prepared operating tests, the facility licensee should submit all pre-scripted questions to the CE for review with sufficient time prior to the examination to resolve any comments from the CE. Any questions asked to follow up on perceived applicant weaknesses must be documented for grading and review.

The examiner should use the following descriptions as guidelines for developing or selecting questions to confirm minimal competency within each subcategory:

a. Subcategory A.1

Questions in Subcategory A.1 will evaluate the applicant's knowledge of the daily administrative operation of the facility. The questions may be integrated into other discussions as they apply throughout the test.

b. Subcategory A.2

These subjects deal with radiation protection, including the approval of release permits and awareness of the requirements associated with those releases and their potential effect on the health and safety of the public. A task with follow-up questions is appropriate for evaluating this subcategory.

1 c. Subcategory A.3

2
3 Applicants must display knowledge based on their responsibility to direct and manage the EPIP
4 during the initial phases of an emergency. Applicants should be familiar with event classification
5 procedures and communication requirements and methods, and have a detailed understanding
6 of the EPIP overall.

7
8 Security may be evaluated by observing the applicant's behavior during the examination.
9 Questioning an applicant about relevant aspects of the facility's security plan is appropriate,
10 however.

11
12 **2. Facility Walkthrough (Category B)**

13
14 This category tests the applicant's knowledge of system design and operation. The examiner
15 will evaluate the applicant's ability to perform tasks and to answer questions about specific
16 systems.

17
18 Attachment 1, "Systems for Operating Tests," lists systems typically found at non-power
19 reactors. The examiner should select systems from this list as applicable to the specific facility.
20 To enhance test integrity, the examiner should vary coverage of systems and subjects across
21 test administrations. The examiner will evaluate applicants on at least five systems from at least
22 three categories listed in Attachment 1. Note that Attachment 1 may not be all inclusive.

23
24 Questions asked to clarify the performance of an applicant must be documented for
25 postexamination evaluation.

26
27 The examiner may select tasks and pre-scripted questions from existing facility examination
28 banks. For facility-prepared operating tests, the facility licensee should submit all pre-scripted
29 questions to the CE for review with sufficient time prior to the examination to resolve any
30 comments from the CE. The examiner may choose to annotate procedures with clarifying
31 comments on how to execute particular steps, as well as identifying critical steps. To evaluate a
32 subject area satisfactorily, the examiner will ask enough questions to determine the applicant's
33 knowledge.

34
35 If the facility's examination bank is used, no more than 40 percent of the questions associated
36 with a particular system may be used without some change.

37
38 **F. Attachments/Forms**

39
40 Attachment 1, "Systems for Operating Tests"

41 Form ES-7.2-1, "Senior Reactor Operator Limited to Fuel Handling Operator Licensing
42 Individual Examination Report"

43 Form ES-7.2-2, "Research and Test Reactor Examination Results Summary Sheet, Senior
44 Reactor Operator Limited to Fuel Handling"

1
2
3

ATTACHMENT 1 SYSTEMS FOR OPERATING TESTS

MAJOR SYSTEMS

Makeup Water/Purification System
Reactor Design/Construction
Reactor Pool System
Fuel Storage Pool System
Neutron Source

WASTE-HANDLING FACILITIES

Liquid Waste System
Solid Waste System
Gaseous Waste System

INSTRUMENTATION SYSTEMS

Area Radiation Monitoring
Gaseous Radiation Monitoring
Liquid Effluent Radiation Monitoring

AUXILIARY SYSTEMS

Normal Alternating Current Supply
Batteries
Service Air
Reactor Building Air Recirculation
Fuel Handling
Containment/Reactor Building
Isolation

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NRC FORM ES-7.2-1

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RESEARCH AND TEST REACTOR SENIOR REACTOR OPERATOR LIMITED TO FUEL HANDLING OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT

CANDIDATE NAME:	CANDIDATE DOCKET NUMBER:
FACILITY NAME:	

WRITTEN EXAMINATION SUMMARY

PREPARED BY:	DATE ADMINISTERED:	GRADED BY:	
CATEGORY A SCORE	CATEGORY B SCORE	CATEGORY C SCORE	OVERALL SCORE

OPERATING TEST SUMMARY

ADMINISTERED BY:	DATE:		
CATEGORY A SCORE	CATEGORY B SCORE	CATEGORY C SCORE	OVERALL SCORE

GRADING RESULTS

	PASS	FAIL	WAIVE/ EXCUSE		
WRITTEN EXAMINATION				GRADER:	DATE:
OPERATING TEST				GRADER:	DATE:
POSTEXAMINATION PEER REVIEWER				GRADER:	DATE:
CHIEF EXAMINER RECOMMENDATION				CHIEF EXAMINER:	DATE:

LICENSE RECOMMENDATION

	BRANCH CHIEF:	DATE:
ISSUE LICENSE		
DENY LICENSE		

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RESEARCH AND TEST REACTOR

SENIOR REACTOR OPERATOR LIMITED TO FUEL HANDLING OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT

FACILITY NAME:

CANDIDATE DOCKET NUMBER:

Operating Test

Category A: ADMINISTRATIVE TOPICS

SUBJECT AREA	Individual Evaluation
1. Support and Conduct of Operations (minimum of 3)	
a. Modifications to Procedures and Equipment (e.g., 10 CFR 50.59 and facility procedures/forms)	
b. Surveillance Testing and Corrective Maintenance Requirements (e.g., ability to isolate equipment and components (tagouts, equipment lockouts), surveillance procedures, and official form location)	
c. Information Dissemination (e.g., night orders, shift turnover logs, status boards)	
d. Startup Requirements (e.g., pre-startup procedures/forms, technical specifications, required equipment)	
e. Operational Limits and Requirements (e.g., safety limit, limiting safety system setting, limiting conditions for operation, shift turnover process)	
2. Radiation Health Physics (minimum of 2)	
a. Radiation Sources and Hazards (e.g., N ¹⁶ , Ar ⁴¹ , H ³ , Na ²⁴ , open beam ports, sample removal, pneumatic tubes)	
b. Portable Radiation Monitoring Equipment (e.g., Geiger-Müller tubes, ion chambers, scintillation detectors, pocket dosimeters)	
c. Exposure Limits and Control (e.g., 10 CFR Part 20 limits, local facility limits, deep dose vs. shallow dose, annual limits on intake)	
d. Radiation Work Permits/Release of Radioactive Materials (including waste).	
3. Implementation of NRC-Required Procedures (All Mandatory)	
a. Security (at the proper level (LSRO/management))	
b. Fuel Handling (e.g., 10 CFR Part 55, technical specifications, procedures)	
c. Emergency Plan (e.g., classifications, responsibilities, implementing procedures)	

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RESEARCH AND TEST REACTOR

SENIOR REACTOR OPERATOR LIMITED TO FUEL HANDLING OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT

FACILITY NAME:

CANDIDATE DOCKET NUMBER:

Operating Test

CATEGORY B: FACILITY WALKTHROUGH

SYSTEM/TASK TITLE ¹	SYSTEM TYPE ¹	GRADE	Comment Page
1.			
2.			
3.			
4.			
5.			
6.			

¹ The CE will evaluate applicants on at least five systems from at least three categories.

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1

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NRC FORM ES-7.2-1

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**RESEARCH AND TEST REACTOR
SENIOR REACTOR OPERATOR LIMITED TO FUEL HANDLING
OPERATOR LICENSING INDIVIDUAL EXAMINATION REPORT**

FACILITY NAME:

CANDIDATE DOCKET NUMBER:

**OPERATING TEST OUTLINE AND GRADING
COMMENT PAGE**

SUBJECT INDEX	COMMENT

2

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1
2
3
4
5
6

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FORM ES-7.2-2 RESEARCH AND TEST REACTOR EXAMINATION RESULTS
SUMMARY SHEET
SENIOR REACTOR OPERATOR LIMITED TO FUEL HANDLING

Facility:				Reactor Status: SHUTDOWN							
Written Examination Date:				Operating Test Dates:							
Chief Examiner:											
OVERALL RESULTS		Total No.		No. Passed		% Passed		No. Failed		% Failed	
Senior Reactor Operator Limited to Fuel Handling						%				%	
Name		Docket 55-	Type ¹	Written Grade				Results ² /Initials ³			
				A	N/A	N/A	Total	Written		Operating	

7
8
9
10
11
12
13

NOTES:

¹ 1=SRO-Fuel Handler Initial, 2 = SRO-Fuel Handler Retake

² P=Passed, F=Failed, W=Waived, N/A=Not Applicable

³ Enter the initial of the CE who graded the written examination or administered the operating test.

PRIVACY ACT INFORMATION-FOR OFFICIAL USE ONLY

7.3 SRO LIMITED TO FUEL HANDLING—EXAMINATION ADMINISTRATION

A. Purpose

This standard specifies guidelines and instructions for administering LSRO examinations. This standard supplements guidance in ES 3.2 and ES 4.2.

The term “examiner” as used in this standard refers to either facility-licensee staff or NRC staff who administer LSRO examinations. When necessary to distinguish between the two, “facility examiner” or “NRC examiner” is used.

B. Examination Withdrawals

Occasionally, an applicant will withdraw from the examination just before it starts. If this happens, the CE will request a letter from the facility licensee withdrawing the applicant's application. This letter should be addressed to the CE who will forward it to the OLA for inclusion in the applicant's docket file.

In rare instances, an applicant will withdraw after the examination has begun. The CE will inform the applicant that this is an examination failure and that they must reapply following the rules of 10 CFR 55.35. Applicants who withdraw from the examination after it has started will be sent a denial letter per ES 5.1.

C. Written Examination Facilities

- (1) The facility licensee is responsible for providing facilities suitable for administering the written examination. The room and associated restroom(s) should allow the NRC CEs to maintain examination security. Enclosure 2 of Attachment 1 in ES 2.1 summarizes the NRC's policies regarding written examination facilities.
- (2) The CE will evaluate the facilities to ensure that the applicants do not have access to any reference material not approved by the CE. The CE will not begin the examination until they are satisfied with the arrangements.

D. Proctoring the Written Examination

- (1) The CE (for NRC proctored examinations) or the facility licensee (for facility-administered examinations) will ensure that the examination is proctored at all times. Before distribution of examinations, the CE or facility licensee will ensure that all proctors clearly understand their responsibilities.

If the proctor determines that they need help with the administration or the oversight of the administration of the written examination, the CE should request assistance from another CE or other responsible NRC employee, or the facility licensee should assign another responsible facility licensee staff member.

The proctor will not engage in any activities that may divert their attention from the applicants and possibly cause the examination to be compromised.
- (2) A proctor should be available to clarify questions for the applicants during the examination. Proctors should be careful not to give away answers when clarifying questions. If a proctor has any doubt about how to respond to an applicant's question, the proctor should consult with the CE before explaining the test item to the applicant.

Proctors will document all questions about specific written examination test items for future reference in resolving facility licensee comments and grading conflicts.

When responding to questions, the proctor should be alert for indications that an applicant is unfamiliar with the terminology used in the examination. The proctor will ask the CE to determine the correct terminology and announce it to all the applicants taking the examination.

All question changes or clarifications will be called to the attention of all the applicants. Changes made to questions during the examination should be made on the master copy and on the copy provided to the facility licensee staff.

E. Written Examination Administration Procedure

The proctor will administer the written examinations as follows:

- (1) Verify each applicant's identity and examination level against the examination assignment sheet (see ES 2.1, Attachment 2). Any errors or absences will be resolved with the facility licensee staff, and the assignment sheet will be updated as required.

The CE will request that the facility licensee withdraw the application of any applicant not taking the examination. This withdrawal will be formalized by the facility licensee sending a letter to the CE who will forward it to the OLA for inclusion in the applicant's docket file.

- (2) Inform the applicants that they may use calculators to complete the examination. Only reference material approved by the CE is allowed in the examination area. The CE will define the examination area.
- (3) Pass out the examinations, answer sheets, and handouts, and instruct the applicants not to review the examination until told to do so.
- (4) Brief the applicants on the rules and guidelines that will be in effect during the written examination using Attachment 1 to Form ES-4.1-1. Inform the applicants that they may refer to the instructions directly beneath the examination cover sheet. **Read the first two rules verbatim.**
- (5) Ask the applicants to verify the completeness of their examination by checking each page.
- (6) After answering any questions that the applicants may have about examination rules, start the examination and record the start time.
- (7) Periodically advise the applicants of the examination time remaining.
- (8) Ensure that each applicant signs the cover sheet when turning in their examination and ensure that the examination package is complete (includes the cover sheet and all answer sheets).
- (9) Remind the applicants to leave the examination area.
- (10) When all of the written examinations are complete, the CE may review the examination with the facility licensee staff as described in Section F.

The CE will complete Form ES-4.1-1 and include it in the master examination package.

F. Facility Licensee Staff Review of the Written Examination

After the last applicant completes the written examination, the CE will update the master copy of the examination and answer key with all the changes made to the questions and answers while the examination was being administered.

The CE will provide a copy of the master examination and answer key to the facility licensee staff and answer any questions that they may have about the NRC's examination review and comment process. ES 2.1, Attachment 1, Enclosure 4, provides detailed guidelines and instructions for this review process.

G. Personnel Present at the Operating Test

The number of persons present during an operating test should be limited to ensure the integrity of the test and to reduce distractions to the applicant.

Only the CE may grant permission for someone to witness an operating test. Under no circumstances is another applicant allowed to witness an operating test. Operating tests are not to be used as training vehicles for future applicants. Videotaping/recording the administration of initial examinations is not allowed.

Examiners may witness an operating test as part of their training or may audit an examiner administering the operating test. Other observers may be allowed to watch operating tests if (1) the CE has approved the request to observe the test and (2) the applicant does not object to the observer's presence.

H. Operating Test Administration Procedures

1. General

The examiner will brief each candidate according to Attachment 1, "Operating Test Briefing Checklist," to this standard before beginning the operating test.

For facility-administered operating tests, the NRC examiner overseeing the facility licensee's administration of the operating test will also observe each operating test. During the observation, the NRC examiner will take notes on the applicant's performance that are sufficient to verify the adequacy of the facility examiner's grading of the applicants.

2. Administrative Topics (Category A)

a. Subcategory A.1

These questions are intended to supplement, not duplicate, administrative system requirements covered in Category B (e.g., valve lineups, control room data system administration and use).

b. Subcategory A.2

These subjects are best covered during the conduct of tasks or questioning associated with Category B.

1 d. Subcategory A.3

2
3 The examiner may best evaluate the applicant's knowledge of the emergency plan by
4 conducting a Category B task requiring its use.

5
6 **3. Facility Walkthrough (Category B)**

7
8 The examiner should encourage the applicant to draw diagrams, flowpaths, and other visual
9 representations. Likewise, the CE should encourage the applicant to use facility forms,
10 schedules, procedures, and other similar materials as appropriate.

11
12 The examiner should retain any supporting material used during the examination to provide
13 additional documentation in support of a pass or fail determination.

14
15 The examiner can improve the efficiency of the operating test by integrating discussions
16 required to complete the various categories.

17
18 The examiner must take sufficient notes during the operating test to document all applicant
19 deficiencies thoroughly. The examiner must cross-reference every comment to a specific task or
20 subject area question.

21
22 **I. Attachments/Forms**

23
24 Attachment 1, "Operating Test Briefing Checklist"

ATTACHMENT 1
OPERATING TEST BRIEFING CHECKLIST

Part A—Applicable to All Operating Tests

- (1) You will be tested at the level of responsibility of the senior reactor operator limited to fuel handling.
- (2) (If applicable, e.g., for NRC-administered operating tests) I am a visitor. Escort responsibilities for ensuring compliance with safety, security, and radiation protection procedures rest with you (the applicant).
- (3) Do not operate facility equipment without appropriate permission.
- (4) Do not hesitate to request clarification of a question during the operating test.
- (5) Frequently, I will stop to update my notes to document your performance. The amount of note-taking is not dependent on your level of performance.
- (6) Operating tests are considered open reference. Any reference material in the facility normally available to operators is also available to you. This includes calibration curves, previous log entries, piping and instrumentation diagrams, calculation sheets, and procedures. However, you are responsible for knowing automatic actions, setpoints and interlocks, operating characteristics, and the immediate actions of emergency and other procedures, as appropriate to the facility.
- (7) There is no specific time limit for the operating test. The test will take whatever time is necessary to cover the selected areas in the depth and scope required.
- (8) I am not allowed to reveal the results of the operating test at its conclusion.
- (9) Do not hesitate to request a break during the operating test.

Part B—Just before Fuel Movement

The examiner should brief the candidate and the licensed operator on the following points:

- (1) I will not intentionally ask you (the applicant) to perform an action that violates facility regulations or procedures or that places the facility in a hazardous condition. If a requested action meets one of these conditions, then you (the applicant) or you (the licensed operator) should immediately inform me. If my intent was to find out whether you (the applicant) would perform such an action, I will phrase the question in some manner other than a request that the action be performed.
- (2) My presence does not alter the normal chain of command during the operating test. You (the applicant) should make all reports and obtain all permissions that would normally be required. All directions to the applicant will come from the responsible supervisor following the facility's administrative procedures. I will only question you (the applicant) and make requests of the supervisor.
- (3) I have not altered the setpoints or calibrations of any instrument nor have I manipulated any controls.

1 (4) It is your (the licensed operator's) responsibility to step in and take control any time there
2 is an unsafe condition. However, you may not provide any coaching or cuing to the
3 applicant.

7.4 SRO LIMITED TO FUEL HANDLING—POSTEXAMINATION ACTIVITIES

A. Purpose

This standard specifies guidelines and instructions for grading and documenting LSRO examinations. This standard supplements guidance in ES 3.3 and ES 4.3 for grading initial examinations.

B. Written Examination—Resolving Facility Licensee Comments

The CE should resolve facility licensee comments per the instructions contained in ES 4.3, Section B, paragraphs 1 through 4.

C. Written Examination—Grading

The grader will grade the written examination following steps 1 through 5 of ES 4.3, Section C. After grading the last applicant, the CE will review the grading for all applicants in detail.

The grader will fill in Form ES-7.4-1, "Research and Test Reactor LSRO Examination Results Summary Sheet." The grader will then forward the examination package to the person who administered the operating tests or the CE.

D. Operating Test—General Evaluation Guidelines

The operating test grader will score the test according to the guidelines in ES 3.3, Section B. If the facility licensee administered the operating test, an NRC examiner will perform an independent review of the grading.

E. Operating Test—Specific Instructions for Completing Form ES-7.4-1

The operating test grader will score the operating test and fill out the form following the guidelines of ES 3.3, Section C, parts 1, 2, 3, and 4.

F. Attachments/Forms

Form ES-7.4-1, "Research and Test Reactor LSRO Examination Results Summary Sheet"

8.0 GLOSSARY

Academic training: Academic training is successfully completed job-related, college-level work.

Applicant: Any individual who has submitted a U.S. Nuclear Regulatory Commission (NRC) Form 398, "Personal Qualification Statement—Licensee," and an NRC Form 396, "Certification of Medical Examination by Facility Licensee," in pursuit of a reactor operator (RO) or senior reactor operator (SRO) license. For the purposes of the examination standards, "applicant" is synonymous with "candidate."

Applicant license level: The level of operator license (i.e., RO or SRO) for which the applicant has applied.

Certification: Affirmation, under penalty of perjury, that the information submitted in the document and attachments is true and correct.

Controls: When used with respect to a nuclear reactor, means apparatus and mechanisms, the manipulation of which directly affects the reactivity or power level of the reactor. When used with respect to any other facility, means apparatus and mechanisms, the manipulation of which could affect the chemical, physical, metallurgical, or nuclear process of the facility in such a manner as to affect the protection of health and safety against radiation.

Critical steps: Those steps that when not performed correctly, in the proper sequence, or at the proper time will prevent the system from functioning properly or preclude successful completion of the task.

Defer/Deferral: To postpone completion of a license application requirement(s) until a later date, typically after the applicant passes an initial NRC licensing examination. An applicant's request to defer a requirement(s) is documented as a "deferral" on NRC Form 398. The applicant shall complete the deferred item(s) before the NRC issues a license.

Disqualifying condition: Something that precludes medical approval for operator licensing.

Event: Any normal evolution, instrument or component failure, equipment malfunction, reactivity manipulation, and major reactor transient when used in the operating test.

Excuse/Excusal: An applicant who has passed either the written examination or operating test and failed the other may request in a new application on NRC Form 398 to be excused from reexamination on the portions of the examination or test that the applicant had passed in support of their immediately preceding application. The Commission may in its discretion grant the request, if it determines that sufficient justification is presented.

Facility licensee: A holder of a license for a facility.

License: The written authorization, by the responsible authority, for an individual to carry out the duties and responsibilities associated with a position requiring licensing.

1 **Licensee:** A person who is authorized to conduct activities under a license issued by the
2 Commission.

3
4 **Multiple-choice item:** A test item that is composed of an item stem and several alternatives
5 from which the trainee must select the best answer.

6
7 **Nonpower reactor:** A research or test reactor as defined by Title 10 of the *Code of Federal*
8 *Regulations* (10 CFR) 50.2, "Definitions."

9
10 **Nuclear experience:** Experience acquired in reactor facility startup activities or operation.
11 Experience in design, construction, maintenance, or related technical services that is job-related
12 may also be considered. On-the-job training at the reactor facility may qualify as equivalent
13 nuclear experience on a one-for-one time basis. Appropriate research or teaching or both may
14 be includable as nuclear experience.

15
16 **Operating test:** That portion of the operator licensing examination based on direct interaction
17 between a CE and an applicant. The operating test assesses applicant knowledge of the design
18 and operation of the reactor and its associated reactor systems, both inside and outside the
19 control room.

20
21 **Operator or reactor operator:** Any individual licensed under 10 CFR Part 55, "Operators'
22 licenses," to manipulate a control of a facility.

23
24 **Permanent medical condition:** A change in the medical status of a licensed operator of
25 probable duration greater than 90 days and for which the activities of the licensed operator
26 should be restricted by the Level 2 person (defined as the facility director, manager, or
27 administrator). Notification of this change shall be made to the responsible authority within
28 30 days of defining the condition as permanent.

29
30 **Scenario:** An integrated group of events comprising a set of facility indications, malfunctions,
31 and evolutions performed or discussed using the facility.

32
33 **Score:** A numerical indication of the performance an individual displays on a test.

34
35 **Senior reactor operator:** Any individual licensed under 10 CFR Part 55 to manipulate the
36 controls of a facility and to direct the licensed activities of licensed operators.

37
38 **Technical support personnel:** Unlicensed personnel principally involved in the calibration,
39 maintenance, repair, and radiation protection activities or performance of other craft and
40 technical activities at the facility. Examples are laboratory technicians, instrument technicians,
41 and health physics personnel.

42
43 **Temporary medical condition:** A change in the medical status of a licensed operator of
44 probable duration of no more than 90 days and for which the activities of the licensed operator
45 may be restricted by the Level 2 person. This change does not require a notification to the
46 responsible authority.

47
48 **Waive/Waiver:** To forgo or relinquish a legal requirement that the NRC is legally entitled to
49 enforce. Forgoing such a requirement is documented as a "waiver." The NRC specifies its ability
50 to waive examination and test requirements in 10 CFR 55.47, "Waiver of examination and test
51 requirements."

BIBLIOGRAPHIC DATA SHEET

(See instructions on the reverse)

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8. PERFORMING ORGANIZATION - NAME AND ADDRESS (If NRC, provide Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address; if contractor, provide name and mailing address.)

Division of Advanced Reactors and Non-Power Production and Utilization Facilities
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

9. SPONSORING ORGANIZATION - NAME AND ADDRESS (If NRC, type "Same as above", if contractor, provide NRC Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address.)

Division of Advanced Reactors and Non-Power Production and Utilization Facilities
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)

The U.S. Nuclear Regulatory Commission (NRC) publishes NUREG-1478, "Operator Licensing Examiner Standards for Research and Test Reactors," to establish the procedures and practices for administration of operator licensing examinations for reactor operator and senior reactor operator licenses at non-power reactor facilities in accordance with Title 10 of the Code of Federal Regulations (10 CFR) Part 55, "Operators' Licenses."

The NRC intends these examiner standards (ESs) to ensure the consistent administration of examinations for all applicants and licensed operators at non-power reactor facilities. As stated in 10 CFR 55.40, "Implementation," paragraph (d), "[t]he Commission shall use the criteria in NUREG-1478 ... for all test and research reactors to prepare, proctor, and grade the written examinations required by [10 CFR] 55.41 and [10 CFR] 55.43 and the operating tests required by [10 CFR] 55.45 for non-power reactor facility licensees."

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)

operator licensing
examination
operator test
reactor operator
senior reactor operator
simulator
training
task analysis

13. AVAILABILITY STATEMENT

unlimited

14. SECURITY CLASSIFICATION

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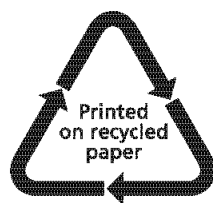
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