NRRC Specific Regulations

Qualification and Competence Requirements for the Approval of Key Personnel at Nuclear Facilities

NRRC-R-03-SR01

2025

هيئة الرقابة النووية والإشعاعية
Nuclear and Radiological Regulatory Commission

Qualification and Competence Requirements for the Approval of Key Personnel at Nuclear Facilities

Specific Regulation

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Preamble

In accordance with the provisions of the Licensing and Regulatory Oversight of Nuclear Facilities Regulation (NRRC-R-03 Rev. 0.1), approved by the NRRC's Board of Directors in resolution No. (R/1/1/2022), dated 20 April 2022, in Chapter (10) Section (18), and the provisions of the Radiation Safety Regulation (NRRC-R-01 Rev. 0.1), approved by the NRRC's Board of Directors in resolution No. (R/1/1/2022), dated 20 April 2022, Chapter (5), Section (26), Article (76), this specific regulation establishes the requirements for the qualification and competence of key personnel at nuclear facilities.

This specific regulation has been prepared in consistent with International Atomic Energy Agency (IAEA) standards, international best practices, and in accordance with the Kingdom's international commitments, and it has been presented in "the Public Consultation Platform, Istitlaa" for public review, comments, and feedback.

This specific regulation has been approved by the NRRC's CEO Resolution No. 0310269 dated 03/02/2026

Table of Contents

Chapter 1: Objective, Scope, and Definitions 9

Section 1: Objective 9

Section 2: Scope 9

Section 3: Definitions 10

Chapter 2: General Provisions 11

Section 4: General Responsibilities of the License Applicant 11

Section 5: General Responsibilities of the Licensee 12

Section 6: Role Definition and Competence Requirements 13

Section 7: Competence Assessment 13

Section 8: Education and Training 14

Section 9: Appointment Timeline 15

Chapter 3: Specific Requirements for Key Personnel 15

Section 10: Responsible Manager 15

Section 11: Person Responsible for Nuclear Safeguards 16

Section 12: Person Responsible for Nuclear Emergency Preparedness and Response 17

Section 13: Person Responsible for Nuclear Security 18

Section 14: Control Room Operators 19

Section 15: Radiation Safety Officer 21

Appendix 1: Training Areas for Key Personnel 23

Table of References

Leadership and Management for Safety
(NRRC-R-04, Rev. 0.1)……..……....9, 15

Licensing and Regulatory Oversight of Nuclear Facilities
(NRRC-R-03, Rev. 0.1)……..……....9

Nuclear Facilities Emergency Preparedness and Response
(NRRC-R-14, Rev. 0.1)…….9, 17 `

Nuclear Material Accountancy and Control
(NRRC-R-12, Rev. 0.1)…….....9,16

Nuclear Security (NRRC-R-11, Rev. 0.1)……..….....9, 18

Operation of Nuclear Facilities (NRRC-R-09, Rev. 0.1)…....9, 20

Radiation Safety (NRRC-R-01, Rev. 0.1)……..…..……..9, 21

Chapter 1: Objective, Scope, and Definitions

Section 1: Objective

1. The objective of this specific regulation is to establish the regulatory requirements for the qualification and competence necessary for the NRRC approval of key personnel at nuclear facilities, and to define the license applicant's obligation to apply for the approval of such personnel. In addition, to maintain qualification and competence of the key personnel.

Section 2: Scope

2. The scope of this specific regulation covers the qualification and competence requirements for key personnel, including requirements relating to education, training, experience, and competence assessment.
3. These key personnel are defined in Chapter 10, Section 18 of the Licensing and Regulatory Oversight of Nuclear Facilities Regulation (NRRC-R-03, Rev. 0.1), which includes:

    a. Responsible Manager and his/her Deputy, as prescribed in Leadership and Management for Safety (NRRC-R-04, Rev. 0.1).
    b. Person Responsible for Nuclear Safeguards and his/her Deputy, as prescribed in Nuclear Material Accountancy and Control (NRRC-R-12, Rev. 0.1).
    c. Person Responsible for Nuclear Emergency Preparedness and Response and his/her Deputy, as prescribed in Nuclear Facilities Emergency Preparedness and Response (NRRC-R-14, Rev. 0.1).
    d. Person Responsible for Nuclear Security and his/her Deputy, as prescribed in Nuclear Security (NRRC-R-11, Rev. 0.1).
    e. Control Room Operators, as prescribed in Operation of Nuclear Facilities (NRRC-R-09, Rev. 0.1).

4. This specific regulation covers the qualification and competence requirements for the Radiation Safety Officer, as prescribed in Regulation on Radiation Safety

(NRRC-R-01, Rev. 0.1), and provides corresponding requirements for his/her Deputy at nuclear facilities.

5. This specific regulation shall apply to all nuclear facilities throughout their lifetimes, unless otherwise specified herein.

Section 3: Definitions

Competence

The ability to apply knowledge and skills to achieve intended results.

Deputy

A person, appointed to a position, that ranks below the person responsible within a specific unit or department, and who assumes responsibility when the person responsible is unavailable to perform his/her duties.

Key Personnel

Personnel requiring approval by the NRRC due to their direct responsibility for nuclear safety, security, safeguards, emergency preparedness and response, and radiation protection at a nuclear facility. This includes the Responsible Manager, the Personnel Responsible for Nuclear Security, Nuclear Safeguards, Nuclear Emergency Preparedness and Response, and the Radiation Safety Officer, their Deputies, and Control Room Operators.

Licensee

Any person holding a valid license.

Nuclear Facility

Any facility where activities or practices utilizing nuclear materials are conducted, including a nuclear power plant, research reactor, nuclear material fabrication facility, spent fuel storage facility, enrichment plant, reprocessing facility, or any other facility

as defined in the nuclear Safeguards Agreement, as well as any similar facility designated by the NRRC.

Nuclear Reactor (For the purposes of this specific regulation)

Nuclear Reactor shall include both research reactors and commercial reactors used for electricity and/or heat production.

Personnel Qualification (For the purposes of this specific regulation)

The qualification is a formal statement resulting from an assessment or audit of an individual's competence to fill a position and to perform all duties assigned to that position in a responsible manner.

Shift Operator

A Control Room Operator responsible for the direct operation of the nuclear reactor. Under the supervision of the Shift Supervisor, the Shift Operator is responsible for controlling and monitoring reactor systems in accordance with approved operating procedures.

Shift Supervisor

A Control Room Operator who directly supervises the operation of the nuclear reactor and the activities of the Shift Operator, and who is responsible for decisions regarding safety measures during operational states and accident conditions.

Chapter 2: General Provisions

Section 4: General Responsibilities of the License Applicant

6. The license applicant shall make and implement adequate arrangements to ensure that key personnel are approved by the NRRC before they are permitted to perform their assigned duties. The required timeline for such approvals is specified in Section 9 of this specific regulation.

7. The license applicant shall ensure that each application for approval is accompanied by documented evidence of the key personnel's education, experience, training, medical fitness, and trustworthiness, in accordance with the requirements of this specific regulation.

8. The qualification and competence criteria for key personnel shall be commensurate with the radiation risks associated with the nuclear facility and shall be established in accordance with graded approach principles.

Section 5: General Responsibilities of the Licensee

9. The licensee shall establish long-term objectives for human resource development, including recruitment, training, and retention strategies, and shall develop a long-term staffing plan aligned with the future structure and operational needs of their organization. This plan shall anticipate the evolving requirements for qualified personnel and competencies throughout the lifetime of the nuclear facility.
10. The licensee shall be responsible for ensuring that the necessary knowledge, skills, attitudes, and experience of key personnel are maintained at all times at the nuclear facility.

11. The approval granted by the NRRC for key personnel shall be valid for a duration specified by the NRRC. However, in any case, the approval is only valid as long as the approved person holds the position. If the person no longer holds the position, the licensee shall submit a change notification to the NRRC to that effect.
12. The licensee shall ensure that the applications for the re-approval of key personnel are submitted to the NRRC well in advance of the expiration of the current approval.
13. The licensee shall retain the prime responsibility for ensuring that approved key personnel possess and maintain the competence required for their assigned duties throughout the duration of their assignment.
14. The licensee shall ensure that no person continues to serve as an approved individual of the key personnel if the NRRC determines that the person is unfit to perform the assigned duties.

Section 6: Role Definition and Competence Requirements

15. The detailed functions, duties, and responsibilities of key personnel shall be clearly defined within the license applicant's organizational structure and reflected in the formal job descriptions for each position. The required competence for key personnel shall be specified on the basis of the following:
    a. Education.
    b. Relevant previous experience.
    c. Initial and continuing training.
16. Requirements for trustworthiness and medical fitness shall be clearly defined for key personnel. The license applicant shall ensure that key personnel undergo medical examinations at the time of recruitment and periodically thereafter, in order to confirm that their physical and mental fitness are adequate for performing their assigned duties.

Section 7: Competence Assessment

17. The license applicant shall assess the competence of all key personnel against the qualification criteria established in this specific regulation prior to assigning them to specific positions.
18. The licensee shall ensure that the competence of all key personnel approved by the NRRC is subject to periodic assessment, in order to verify continued compliance with qualification requirements and sustained suitability to perform their assigned duties.
19. The qualification criteria used by the license applicant to assess a person's competence shall be documented and shall, as applicable to the position, include the following:
    a. The requirements regarding education, training, and experience.
    b. Knowledge of established safe working practices.
    c. Knowledge of the nuclear facility and its safety systems.
    d. Knowledge of relevant national laws, regulatory requirements, and applicable international obligations.

e. Technical, interpersonal, administrative, and management competencies.

Section 8: Education and Training

20. The license applicant shall ensure that key personnel possess an educational background relevant to their responsibilities and commensurate with the duties of their assigned position.
21. The license applicant shall establish and implement adequate arrangements for initial and continuing training in order to ensure the acquisition and maintenance of the competence required for the performance of the duties related to nuclear and radiological safety, security, safeguards, and emergency preparedness and response. The content of each training program shall be developed using a systematic approach to training and shall promote attitudes that reinforce a strong safety culture, ensuring that safety issues receive the appropriate priority and attention commensurate with their safety significance.
22. The training areas for key personnel shall include, as applicable to their positions, those specified in **Appendix 1**.
23. The license applicant shall ensure the availability of adequate training facilities, including, where appropriate, a representative full-scope training simulator, sufficient training materials, and facilities for technical and other relevant training. Training on the simulator shall cover both operational states and accident conditions of the nuclear facility.

Section 9: Appointment Timeline

24. The Person Responsible for Nuclear Safeguards and the Person Responsible for Nuclear Security, together with their Deputies, shall be appointed prior to the granting of the site license for the nuclear facility.
25. The Responsible Manager and the Person Responsible for Nuclear Emergency Preparedness and Response, together with their Deputies, shall be appointed prior to the granting of the construction license for the nuclear facility.
26. The Radiation Safety Officer and his/her Deputy shall be appointed prior to the delivery of any nuclear material to the nuclear facility site.
27. An adequate number of Control Room Operators shall be appointed prior to the granting of the operating license for the nuclear facility.

Chapter 3: Specific Requirements for Key Personnel

Section 10: Responsible Manager

28. The license applicant shall ensure that the duties of the Responsible Manager and his/her Deputy are consistent with Article 18 of the Leadership and Management for Safety Regulation (NRRC-R-04, Rev. 0.1), as applicable to the construction phase, the operation phase, or the decommissioning phase of the nuclear facility.
29. The license applicant shall ensure that the Responsible Manager and his/her Deputy have prior experience that includes the following:
    a. Sufficient work experience in a relevant nuclear facility involving construction, commissioning, operation, and decommissioning, to demonstrate practical competence and management capability commensurate with the duties and responsibilities of the position.
    b. Participation in the planning and implementation of emergency preparedness, security, and arrangements of nuclear safeguards at nuclear facilities, including participation in the development and/or execution of response strategies for operational scenarios and challenging situations.

Section 11: Person Responsible for Nuclear Safeguards

30. The license applicant shall ensure that the Person Responsible for Nuclear Safeguards and his/her Deputy possess the competence necessary to ensure the following:
    a. The facility's Nuclear Material Accountancy and Control (NMAC) system is effectively established, implemented, and maintained.
    b. Nuclear Safeguards and NMAC information are prepared and submitted to the NRRC in a timely and accurate manner.
    c. Implementation of the Agreement between the Kingdom of Saudi Arabia and the IAEA for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons at the nuclear facility, including preparedness, capability, and facilitation of relevant IAEA inspections.
    d. All the regulatory requirements under the Nuclear Material Accountancy and Control Regulation (NRRC-R-12, Rev. 0.1), as well as other applicable regulatory requirements relevant to nuclear safeguards, are fulfilled.
31. The license applicant shall ensure that the Person Responsible for Nuclear Safeguards and his/her Deputy have prior experience that includes the following:
    a. Sufficient work experience in nuclear safeguards at a relevant nuclear facility, to demonstrate practical competence and management capability commensurate with the duties and responsibilities of the position.
    b. Implementation of nuclear material accountancy and control regulatory requirements at the facility level, facilitation of IAEA inspections, and import and export control of nuclear-related items.

Section 12: Person Responsible for Nuclear Emergency Preparedness and Response

32. The license applicant shall ensure that the Person Responsible for Emergency Preparedness and Response and his/her Deputy possess the competence necessary to ensure the following:
    a. The Emergency Preparedness Plan is established, implemented, and maintained to ensure an effective response to emergencies.
    b. Emergency preparedness and response functions are carried out in accordance with the Emergency Preparedness Plan.
    c. Emergency drills and training are regularly conducted to ensure the readiness of personnel.
    d. Timely notification of emergencies is provided to site personnel and off-site relevant authorities.
    e. All regulatory requirements under the Nuclear Facilities Emergency Preparedness and Response Regulation (NRRC-R-14, Rev. 0.1), as well as other applicable regulatory requirements relevant to emergency preparedness and response, are fulfilled.
33. The license applicant shall ensure that the Person Responsible for Emergency Preparedness and Response and his/her Deputy have prior experience that includes the following:
    a. Sufficient work experience in nuclear emergency preparedness and response at a relevant nuclear facility, to demonstrate practical competence and management capability commensurate with the duties and responsibilities of the position.
    b. The Planning and implementation of emergency preparedness arrangements at a relevant nuclear facility.
    c. Participation in, or coordination of, nuclear emergency exercises, including protective actions and communication with the relevant national authorities and international organizations.

Section 13: Person Responsible for Nuclear Security

34. The license applicant shall ensure that the Person Responsible for Security and his/her Deputy possess the competence necessary to ensure the following:

    a. The facility's Nuclear Security Plan is developed, implemented, maintained, and periodically reviewed.
    b. Threat and vulnerability assessments are conducted, and protective measures, including the testing of physical protection systems, are implemented.
    c. Immediate and effective responses are carried out during nuclear security incidents, and timely reporting to the NRRC and other relevant national authorities is ensured.
    d. Personnel reliability programs are established and maintained, and staff receive appropriate nuclear security training and understand their roles and responsibilities.
    e. All regulatory requirements under the Nuclear Security Regulation (NRRC-R-11, Rev. 0.1), as well as other applicable regulatory requirements relevant to nuclear security, are fulfilled.

35. The license applicant shall ensure that the Person Responsible for Nuclear Security and his/her Deputy have prior experience that includes the following:

    a. Sufficient work experience in nuclear security at a relevant nuclear facility or in a national security agency, to demonstrate practical competence and management capability commensurate with the duties and responsibilities of the position.
    b. Design, evaluation, or management of protective security systems.
    c. Development, implementation, or oversight of corporate or site-specific security arrangements, including vulnerability assessments and incident response.

Section 14: Control Room Operators

36. The license applicant shall ensure that the following Control Room Operators are approved by the NRRC prior to assigning them to their duties:
    a. Shift Operator.
    b. Shift Supervisor.
37. The license applicant shall notify the NRRC in advance of any competency assessments being conducted for control room operators. The licensee applicant shall also make appropriate arrangements to enable NRRC participation in such assessments.
38. The license applicant shall ensure that Shift Operators possesses the competence necessary to ensure the following:
    a. Nuclear Reactor systems are operated, monitored, and controlled in accordance with approved operating and administrative procedures.
    b. Reactor trip and the actuation of safety systems are manually initiated if automatic systems fail.
    c. Operational changes and significant events are accurately recorded, and anomalies are reported to the Shift Supervisor.
39. The Shift Operators shall have experience working on shifts at nuclear reactors or conventional power plants. Adequate experience shall be gained at a nuclear reactor, which shall include sufficient site-specific experience at the nuclear facility concerned.
40. The license applicant shall ensure that the Shift Supervisor possesses the competence necessary to ensure the following:
    a. Each shift is adequately staffed, and request for additional personnel is initiated when necessary.
    b. Effective coordination among groups involved in operations, chemistry control, radiation protection, maintenance, reactor physics, and technical support for safe operation of the nuclear reactor in all operational states and in accident conditions.

c. Complex or infrequently performed facility modes of operation are supervised.

d. Facility inspections are conducted to identify and correct deficiencies in procedures, material conditions, housekeeping, personnel performance, and protection against hazards, and the relevant corrective actions are implemented.

e. Any unusual occurrence is promptly assessed, initial mitigating actions are taken, personnel safety is ensured, and emergency operating procedures are initiated.

f. Reports of abnormal occurrences and reportable events are prepared and submitted in accordance with Operation of Nuclear Facilities (NRRC-R-09 Rev. 0.1).

g. The removal from service of systems and components for maintenance, testing, or operational activities, and their return to service, are properly authorized.

h. Permits for work or tests on systems and components important to safety are properly authorized and controlled.

i. Shift records are accurate, complete, reviewed for deducing trends, and the Shift Supervisor's log is maintained.

j. The qualification, requalification, and training of Shift Operators are overseen to ensure that staff remain properly trained and qualified.

41. The Shift Supervisor shall have adequate experience in reactor operations at a nuclear reactor, including experience working with a shift team. This experience shall be gained at an operating nuclear reactor and shall include sufficient experience as an approved Shift Operator at the nuclear facility concerned.

Section 15: Radiation Safety Officer

42. The license applicant shall ensure that the Radiation Safety Officer and his/her Deputy possess the competence necessary to ensure the following:
    a. The management system elements relevant to radiation protection are effectively implemented.
    b. The facility's Radiation Protection Program, involving workers, the public, and the environment, is implemented and maintained.
    c. Workplace and environmental radiation levels are monitored, and dose and exposure records are documented and accurately maintained.
    d. Radiation protection events are investigated, causes are determined, corrective actions are implemented, and notifications and reports are submitted to the NRRC.
    e. Radiation safety training and guidance are provided to facility staff and contractors.
    f. Radiation protection activities are coordinated with nuclear safety, security, safeguards, and emergency preparedness functions.
    g. All regulatory requirements under the Radiation Safety Regulation (NRRC-R-01, Rev. 0.1), as well as other applicable regulatory requirements relevant to radiation protection, are fulfilled.

43. The license applicant shall ensure that the Radiation Safety Officer and his/her Deputy have prior experience that includes the following:
    a. Work in radiation safety at a relevant nuclear facility, sufficient to demonstrate practical competence and management capability commensurate with the duties and responsibilities of the position.
    b. Control and monitoring of occupational, public, and environmental radiation exposures.
    c. Implementation or oversight of the facility's Radiation Protection Program, including workplace monitoring, dose control, and the application of the ALARA principle (as low as reasonably achievable).
    d. Investigation of radiation protection events and verification of the effectiveness of corrective actions.
    e. Coordination of radiation protection activities with those related to nuclear safety, security, safeguards, and emergency preparedness at the nuclear facility.

Appendix 1: Training Areas for Key Personnel

The initial and continuing training programs for key personnel, excluding Control Room Operators, shall include the following:

A1.1. A thorough understanding of the basic principles of nuclear technology, nuclear facility systems, nuclear safety, radiation protection, and the design intents and assumptions, together with the necessary on-the-job training.

A1.2. The interface between safety and nuclear security, ensuring that personnel understand how this interface affects their assigned duties.

A1.3. Fostering a strong safety culture, promoting awareness that safety is the primary objective and takes precedence over production needs.

A1.4. Special features of managing a nuclear facility, including a focus on safety, familiarity with emergency procedures, maintaining high levels of safety and security, and utilizing feedback from operating experience and root cause analysis of events at nuclear facilities.

A1.5. A thorough understanding of all relevant standards, rules, and regulations.

A1.6. Managerial and supervisory skills, including coaching and mentoring, self-assessment techniques, root cause analysis, human and organizational factors, team building, communication, management system reviews, and periodic safety reviews.

The training program for Control Room Operators at nuclear reactors shall be developed using a systematic approach to training and shall cover the following areas:

A1.7. Fundamentals of nuclear physics and reactor physics.

A1.8. Thermohydraulics.

A1.9. Fundamentals of reactor engineering and reactor safety.

A1.10. Radiation protection.

A1.11. Occupational safety.

A1.12. Emergency preparedness and response planning.

A1.13. Operating and emergency procedures for normal operation, anticipated operational occurrences, and, insofar as practicable, accident conditions.

A1.14. Operating policies, administrative controls, operational limits and conditions (OLCs), and safety culture.

A1.15. Regulatory requirements applicable to nuclear reactor operations.

A1.16. Nuclear security and access control.

A1.17. Areas of technology to a level of detail commensurate with their assigned tasks, including a thorough theoretical and practical knowledge of nuclear reactor systems, their functions and safety significance, as well as the nuclear facility layout and operation.

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Qualification and Competence Requirements for the Approval of Key Personnel at Nuclear Facilities -NRRC-R-03-SR01. / Nuclear and Radiological Regulatory Commission .- Riyadh , 2025

..p ; ..cm

L.D. no. 1447/7455
ISBN: 978-603-8492-43-7

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